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OVERRULE BRITANNIA?

THE RAF'S RHODESIAN STANDOFF, 1965–66



ISSUE No 15

NEW BOOK:

Northrop Delta - AB Aerotransport

Rob J. M. Mulder

At the beginning of the 1930s, night mail services started to become more and more important for European airlines. Navigation and safety equipment had improved drastically and aircraft became much more economical to fly. The introduction of the fast Lockheed Orion by Swissair in April 1932 led to a true revolution within air transport. Everyone wanted aircraft that flew faster than their existing obsolete Fokker or Junkers aircraft did.

In Sweden, AB Aerotransport's Managing Director, Carl Florman, became interested in faster airliners as well. In 1933 he saw, during a visit to Norway, a Northrop Gamma and was interested in a similar aircraft for his airline. Offers were requested and through Northrop's representative, Norwegian aviator Bernt Balchen, AB Aerotransport ordered a passenger Delta 1C and a mail aircraft, the Delta 1E.

The operation of both aircraft was marked by problems and challenges for the pilots. It took them some time to master the aircraft. The Delta 1E never entered service, as it crashed on a trial mail flight. In 1937 AB Aerotransport sold the Delta 1C to Spanish airline Líneas Aéreas Postales Españolas — LAPE. It was in civil and military service until well after World War Two.

Following intensive research, the author describes in detail the history of the Northrop Alpha, Beta, Gamma and Delta (civil and military), as well as the operation of the two aircraft in service with AB Aerotransport, illustrated with many photographs, tables, drawings and colour artwork by Juanita Franzén, Mats Averkvist and Nils Mathisrud.

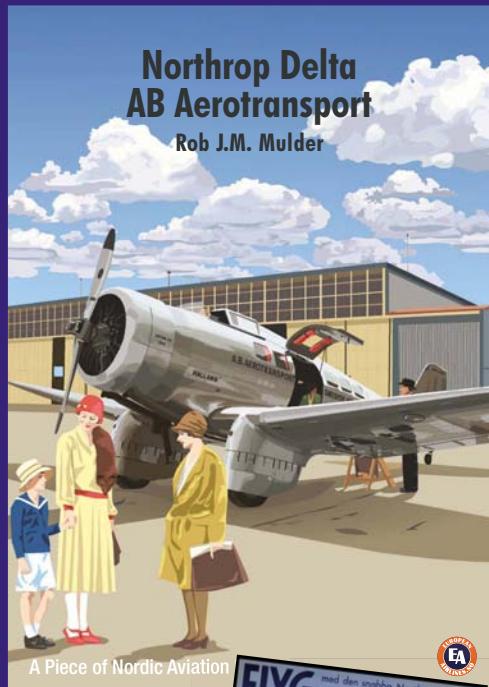
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Editor's Letter

IT WAS WHILE putting the finishing touches on Rowland White's fascinating feature *The New Frontier*, in which two of Britain's most distinguished naval aviators — Cdr Geoffrey Higgs and Capt Eric M. Brown — recall the special relationship between British and American test pilots, that I received the sad news that "Winkle", as Eric was affectionately known by everybody, had died on February 21.

Eric was a great supporter of TAH and was immensely encouraging when he learned that we were striking out on our own in 2012. I first met Eric at the Fleet Air Arm Museum at Yeovilton more than a decade ago, and was lucky enough to be invited to have lunch with this legendary aviator. Given the extremely high standards he had always demanded of himself, and, I assumed, everybody else, I found myself expecting a dour, waspish Scotsman. I was delighted, however, to be utterly charmed by his warm, open conversation and boundless enthusiasm for all things aviation, a subject he had fallen very much in love with as a boy and which clearly remained an abiding passion.

Our paths crossed frequently after that first lunch, often at one of the many presentations he gave to spellbound listeners, be it a lecture at a prestigious institution or an informal talk to a local enthusiasts' group. As another of our contributors to this issue, naval air historian Matthew Willis, recalls in his fine online tribute at www.navalairhistory.com: "Winkle was not just a fascinating man but a great public speaker too — largely by letting his knowledge and experience tell the story without any need for bombast. He won over every audience I ever saw him address". It's a well-worn cliché, but no less true for that, to say we shall never see his like again.

Cheerio Captain.

A handwritten signature in black ink that reads 'Nick Stroud'.

FRONT COVER An RAF Bristol Britannia is marshalled in at Lusaka, Zambia, in the wake of Rhodesia's Unilateral Declaration of Independence in 1965. The full story begins on page 10... RAF AHB

BACK COVER Buccaneer S.2 XK526 during a dummy deck take-off at RAE Bedford. Rowland White's The New Frontier starts on page 88.

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AIR CORRESPONDENCE



Letters to the Editor

An impeccable source

SIR — Having recently bought some early issues of TAH from you, I remember the story about the Super Trader G-AGRH going down (*Ill Wind, TAH2*). I was on duty at RAF Khormaksar, Aden, when the panic started (secret equipment etc) and was nominated to join the crew of a No 37 Sqn Avro Shackleton to go and look for it. I got an aircrew safety bag (I was not aircrew) plus a powerful pair of binoculars and, after racing around getting all hot and bothered, reported to the flightline — only to be told that as I was not aircrew I could not go, and a chiefy went in my place. Ah, well, one of life's disappointments.

However, also in Issue 2, there is a matter of the Swedish Fireflies to put right! I recognise the authenticity of your contributor — Jan Forsgren — but if he had read my 1992 Airlife book on the Fairey Firefly he would have got the facts right to start with.

Identity SE-BRA reads DK609 when it should read DK568 — DK609 fell in a batch of cancelled Fireflies, DK588–619.

There is no mystery about the original identity of SE-BRM. It was DK430.

All the rest checked out correctly. My original information came from the chief engineer's

logbooks plus the aircraft movement cards in the test pilots' room at Ringway. Nowadays long gone, sadly.

W.A. Harrison Derby, Derbyshire

That lightbulb moment

SIR — Your article on the South Bank heliport of the 1950s (*The South Bank Show*, TAH13) answered some literary allusions about which I have wondered all my life.

I now know that the float-equipped S-55 Whirlwind in the *Thomas the Tank Engine* books was inspired by the BEA WS-55s that flew into the middle of London at that time, and that would have been in the news when the books were written. I won't say that I have wondered about this every day for the last 50 years — that would be sad; but it is nice to have an "Ah-ha!" moment after all this time. When my literary tastes matured, I read Alistair MacLean's *The Satan Bug*, which was written in about 1962 and in which the final showdown is set in a London railway terminus, with a heliport built above it: you article confirms that this was actually planned for Waterloo Station.

The article on Italo Balbo was interesting and it seems that he was a decent and honourable man.

Historian W.A. "Bill" Harrison very nearly got actively involved in the search for Avro Tudor 4B "Super Trader" G-AGRH after its disappearance over the Turkish-Soviet border in 1959 while carrying secret missile components to Woomera — see his letter on this page. Here at RIGHT is the opening spread of Roger Carvell's detailed article on the incident, published in TAH2. We might mention here that back-issues of every edition of The Aviation Historian are available to buy, in print and digital form, via our website shop at www.theaviationhistorian.com, although the early print issues are in increasingly short supply — so now could be a good time to complete your collection!

The article on Pan Am Flight 843 was also interesting. I wonder if modern airliners have a hand-cranking system to get the undercarriage down, as the early 707s seem to have done. In the photo of that 707 in Boeing colours, what is the aircraft in the background? It could be a Stratofreighter, but it seems to have a rear loading ramp, and the tail is not right for a Globemaster.

Adrian Roberts West Wickham, Kent

[*The Stratofreighter is C-97A (originally YC-97A) 45-59593, one of three, c/ns 15718-20, serials 45-59593-95, built as troop carriers. Boeing used '593 for test work – Ed]*

Buccaneering barnstormer

SIR — Please may I add the following to Philip Jarrett's *Lost & Found* article in TAH11 concerning Avro 504K G-EAJQ?

Before attending the ELTA show at Amsterdam, held during September 1–14, 1919, G-EAJQ was one of the Avro 504Ks allocated to cover the seaside resorts of Margate and Ramsgate by the Avro Transport Company for the 1919 summer season and based at Cheeseman's Farm alongside Manston Aerodrome under the command of 23-year-old Capt Henry Duncan Davis AFC.

On the day of the accident (I too have it as



TAH ARCHIVE

ABOVE Of course! The inspiration for Harold the Helicopter (see Adrian Roberts's letter on these pages): a superb photograph of float-equipped Westland-Sikorsky WS-55 G-ANUK at London's Waterloo Air Terminal in 1955, against a backdrop of railway arches and the Royal Festival Hall.

RIGHT It's always the one in the background that's a puzzle, isn't it — the rear-loading modified Stratofreighter, partly visible in this detail from our TAH13 picture of Boeing 707 N761PA at Renton, is YC-97A 45-59593. See the same letter from Adrian Roberts.



VIA MELVYN HISCOCK

September 28, 1920) H.W.B. Hansford, who held B Licence 547, was operating from an unlicensed field at Honiton. According to the official report into the incident, while returning from a joyride with two passengers (Police Sgt F. Bawden and Miss Bawden) at about 1900hr he encountered a bump while gliding in over a river about 300yd (280m) from the edge of the field. Endeavouring to counter a loss of height, Hansford pulled back the stick and applied power but failed to lift over the banks either side of a sunken road, the impact ripping off the undercarriage.

All four longerons were broken just behind the engine backplate but otherwise the aircraft was little damaged, no injuries being suffered by the pilot or passengers. The investigation into the accident considered the field unsuitable for use as a temporary aerodrome, measuring about 200yd (180m) by 170yd (155m), surrounded on three sides by trees and hedges and on the fourth by the sunken road. The cause was put down to "the pilot misjudging his glide and losing flying speed before reaching the landing ground". The aircraft was written off.

An interesting postscript to the above accident highlighted Henry Hansford's interpretation of the Air Navigation Regulations and how they impinged on his operations. During a police investigation into his use of the field at Honiton he stated that he had verbal permission from Col F.S. Shelmerdine, Controller of Aerodrome Licensing, to use the landing ground for the carrying of passengers for "hire and reward" at any town in the West Country that he chose for periods of two or three days provided that he had one licensed headquarters aerodrome. For the latter purpose he had a licensed field at Pinhoe near Exeter. He used fields based on this premise at Bridport, Lyme Regis, Seaton, Crewkerne, Chard, Axminster and Honiton, although he had nothing in writing to this effect. The investigation's report of September 29, 1920, signed by Frank S. Wilkins, went on to say that the field at Honiton in which the accident occurred was too small for a flyer of doubtful judgment, as the pilot seemed to be.

In the report the local Superintendent of Police (Mr Braddell) recalled that on one occasion he saw Mr Hansford go right across the field, in an attempt to land, but had to pull the machine up over the opposite hedge and, putting his engine on, go round again, narrowly averting a serious accident with passengers aboard. The last accident was a case of stalling in an undershot attempt at landing, also with considerable risk to passengers. The police also raised the point of stunting at low heights. The pilot told the

Superintendent that at 3,000ft he could do as he liked and had apparently been acting upon that. The police also wanted an official clarification of the temporary landing ground regulation, as they considered the Home Office Regulations (Regulation 4) rather vague on this point.

The Regulation referred to stated: "An aerodrome must not be regularly used for the landing or departure of aircraft carrying passengers for hire or reward, unless it is either under the control of the Air Ministry or has been licensed by the Air Ministry for this purpose; but the Regulation does not prohibit the use of a private aerodrome or some other unlicensed place for the landing or departure of a passenger aircraft in an emergency or occasionally, provided it is not used as a regular thing".

The situation was discussed by Col Shelmerdine, R.L. Megarry, Assistant Secretary, Air Ministry Legal Branch, and C.R. Brigstocke CB, Assistant Secretary, Air Ministry. First, Hansford had not received verbal permission from Col Shelmerdine but it was agreed that the Regulation was open to variations in interpretation. It was felt that if Hansford had used the fields once as an unusual case he would not have been breaking the law, but if he had used them continually in the course of a repeated number of flights forming a series, he would have contravened the law; but the point where isolated flights became a series was never easy to define. It was noted that the Regulation in question was under review. In the light of a lack of hard facts in the police report it was felt it would be unsafe to launch a prosecution in this case, but Mr Hansford might be warned against repeating his proceedings.

Ian James Christchurch, Dorset

[John Havers adds that the date of the accident may have been September 23 and not 28, and that the likely location of the temporary airfield at Honiton "was fields on the south side of the River Otter between Langford Bridge, on the Dunkeswell Road, and Clapper Lane Bridge leading to Combe Raleigh. Flying is said to have taken place here in the past" — Ed]

A mine of (reliable) information

SIR — It may interest TAH readers to know that several volumes related to the First World War can be downloaded at no cost from the Internet Archive (www.archive.org), a non-profit organisation in San Francisco, California, dedicated to preserving all manner of media in an electronic format. Unlike Wikipedia it is not plagued with inconsistencies, inaccuracies and mischievously-placed disinformation as it is a

depository for original material either in the public domain to begin with or out of copyright.

In that latter category comes *The War in the Air*, in six volumes, the first written by Walter Raleigh and the remainder by H.A. Jones, published in 1919–37 at the direction of The Committee of Imperial Defence. With original sets commanding a princely sum, the availability of these volumes in electronic form affords access at no cost to an important set of period books. Also relevant to World War One are all 21 volumes of the *Times* history of that conflict, and many other monographs, studies and archival treasures as well, all free to download. There is even a copy (in PDF

form) of the *Statistics of the Military Effort of the British Empire*, a vast tome with an inventory of every bullet, shell, animal and resource applied and/or expended during the 1914–18 conflict.

Of course there are many other categories of subject relevant to aviation history and of potential interest to TAH readers. The resource is robust because it is substantially funded and boasts more than 15,000 terabytes (to date) of historic books, documents, reports, manuscripts, audio recordings and films. This is a vast archive and highly searchable via an efficient and effective engine at the site.

Dr David Baker *East Sussex*



Something's afoot here . . .

HERE IS A CURIOUS appendage, as it were, to the final episode of Echoes From Dawn Skies in TAH13, in which F.W. Merriam wrote inter alia about Marcel Desoutter, who invented lightweight artificial limbs after losing his own leg in a flying accident. TAH Editorial Board member and early-aviation historian Philip Jarrett sent us this photograph of Desoutter making his own light-alloy prosthetic leg using the principles of aircraft construction, having found a heavy wooden leg too cumbersome. "The picture was probably taken some time between June 1913 and early 1914; most likely late 1913", says Philip.



brothers at arms



Britain's standoff with
Rhodesia, 1965–66

MAIN PICTURE A pair of RAF groundcrew members await the arrival of two aircrew of No 29 Sqn for another sortie from N'dola, during the unit's deployment to Zambia in the wake of Rhodesia's unilateral declaration of independence in November 1965. Javelin FAW.9R XH890 was the only one lost of the ten deployed by No 29 Sqn to Zambia during 1965–66.

RAF AIR HISTORICAL BRANCH

RIGHT British Prime Minister Harold Wilson (left) and his Rhodesian opposite number, Ian Smith (furthest right), outside No 10 Downing Street on October 8, 1965, following extensive talks on Southern Rhodesia's full independence, little more than a month before Smith's controversial declaration.



On November 11, 1965, British Crown colony Southern Rhodesia made its historic Unilateral Declaration of Independence from the mother country. Despite "kith-and-kin" ties between the two nations, Britain reacted with a military show of strength. **GUY ELLIS** examines the RAF's response to the crisis, in which Firestreak-armed Javelins were deployed to neighbouring Zambia

THE TWO FULLY armed military jets flew along either side of the mud-brown African river; both carried the same green-grey camouflage and similar red-white-and-blue national markings, but on the smaller aircraft the roundels were overlaid with an image of an assegai—an African tribal spear—Rhodesia's national symbol.

The previous month the Rhodesian Prime Minister, Ian Smith, had telegrammed his British counterpart Harold Wilson at 1100hr on November 11, 1965, announcing his country's Unilateral Declaration of Independence (UDI) from Great Britain. The message was planned to coincide with Remembrance Day as a reminder of the contribution Southern Rhodesia (as it was still referred to by the British until the UDI) had made to Commonwealth military forces over many years. It was the first unilateral break from the UK since the American Declaration of Independence nearly two centuries before.

RHODESIAN INDEPENDENCE

The UDI had come about owing to the frustration of the white ruling Rhodesian Government with the British policy known as "No Independence Before Majority African Rule", or NIBMAR. This stated that those colonies with a substantial population of white settlers would not receive independence except under conditions of universal suffrage and majority rule.





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LEFT Royal Rhodesian Air Force pilots gather around the wing of a de Havilland Vampire FB.9 before a sortie. The Vampire entered service in Rhodesia in 1953. Note the three assegais in the standard RAF roundel, representing Southern Rhodesia, Northern Rhodesia and Nyasaland, at that time confederated states.

BETWEEN The first Rhodesian Hawker Hunter to be delivered, RRAF 116 was originally RAF F.6 XE559 before being converted to FGA.9 standard and flown to New Sarum in late 1962. At the time of the UDI the RRAF had 12 Hunters on strength.

The declaration was the epitome of all that the neighbouring state of Zambia, which had only gained independence from the UK in October 1964, feared. Rhodesia held the keys to the new country's economic wellbeing. Zambia's President, Kenneth Kaunda, immediately despatched troops to the Rhodesian border while demanding that Britain take direct military action against the "rebel" Rhodesians.

Britain's close historic ties with Rhodesia became irrelevant overnight, and there is evidence that British contingency plans to counteract any attempted coup by the white government of the Federation of Rhodesia and Nyasaland, made in 1961, were reviewed for use in the nascent crisis.

The first problem was whether the loyalty of British troops would hold against the prospect of attacking Rhodesian soldiers, many of whom had been trained by, and had served with, British forces. It was a "kith-and-kin" aspect that appealed to the popular press over and above the purely political considerations.

Added to this was Britain's political desire for the most limited of surgical strikes on Rhodesia. The British generals had pointed out that any invasion of Rhodesia would have to be preceded by an airstrike that would lead to loss of life, both military and civilian. There would be no return to normality after such an attack. It would inevitably be considered a "stab in the back" by Rhodesians living in Europe.

Although the Royal Rhodesian Air Force (RRAF) was equipped with around 70 aircraft, including Hawker Hunter and de Havilland Vampire jet fighters, English Electric Canberra jet bombers, Aérospatiale Alouette III helicopters and piston-engined Percival Provost trainers, these would have been no match for the state-of-the-art hardware the RAF could bring to bear.

Back in April 1964 the RAF had stationed three tactical reconnaissance Vickers Valiants at Salisbury's New Sarum Air Station, officially to undertake a photographic survey over Bechuanaland/Botswana. However, when on a tour of the



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"The extent to which what has happened in Rhodesia will create a difficult situation in Africa and the Commonwealth makes it a matter of world concern, and those who deny it are burying their heads in the sand . . ."

— Harold Wilson,
November 11, 1965

RAF AIR HISTORICAL BRANCH

unit, Gp Capt Philip "Flap" Stapleford of the RRAF noticed that the aircraft were equipped not only with standard vertical survey cameras, but also some obliquely mounted cameras normally used for the production of strike folders. It is possible that the RAF was using the survey as a means of updating its strategic planning data for the region.

JAVELIN-RATTLING

In late November 1965 the British Chiefs of Staff submitted a report that outlined the possible use of Avro Vulcans, Canberras, Blackburn Buccaneers, de Havilland Sea Vixens and Supermarine Scimitars to neutralise the threat posed by the Rhodesians.

Ken Flower, head of the Rhodesian intelligence services at the time, recalled the following in his memoir *Serving Secretly: An Intelligence Chief on Record* (John Murray Publishers Ltd, 1987):

"I recall Air Vice-Marshal Bentley, Rhodesia's diplomatic representative in Washington, saying during consultations in October [1965], that the RAF could neutralise the RRAF without a shot being fired in anger. One way of doing this would have been for the RAF to have its Vulcan bombers [then based in Nairobi, Kenya, but which could be moved to Lusaka in Zambia] keeping a permanent watch in the skies over New Sarum and Thornhill [RRAF bases] . . . with the threat issued in advance that if any Rhodesian aircraft tried to get airborne the runways and aircraft on the ground would be bombed."

Back in the UK Wilson's Labour Government not only feared a bloody civil war in Rhodesia but its slim majority in Parliament would have required that the Conservatives back any planned invasion, which would have been unlikely. The political results of such an attack were considered

ABOVE Harold Wilson is greeted by Kenyan President Jomo Kenyatta during a visit to Kenya in January 1966. Wilson had flown into Nairobi after a few days with Kenneth Kaunda in Lusaka, where both were treated to a flypast by the Javelins. Afterwards, Wilson mused: "I don't know what effect they would have had on any potential enemy — but they impressed me!"

so disastrous that no real discussion of invading Rhodesia took place. On December 21, 1965, Wilson informed Parliament that:

"In the course of this time, uniquely among all colonies in history, [Rhodesia] has developed its own armed forces, which means that it could resist any form of attack and invasion and that the use of military force against Rhodesia would not be like these other acts. It would not be a case of arresting a subversive individual. It would mean a bloody war — and probably a bloody war turning into a bloody civil war."

Instead, an alternative plan was proposed by the Secretary of the Chiefs of Staff Committee, AVM J.H. Lapsley, who concluded that a detachment of 12 RAF or Royal Navy fighters stationed in Zambia would be an effective deterrent — or if it came to it, strike force — against the RRAF.

While the Zambian Government was demanding that British troops protect the hydro-electric station at Kariba and also guard the border, the UK Government argued "that military measures were impractical, unnecessary and undesirable". Despite its requests for troops, Zambia nevertheless wanted to avoid a British army of occupation that harked back to colonial times, while Britain had neither the desire nor the wherewithal to begin a troop build-up in Zambia.

Harold Wilson was desperate to ensure that Zambian airfields come under RAF control and thus avert his unfounded conviction that either the liberationist Organisation of African Unity

Unknown to the Rhodesians, HMS Eagle was stationed off the coast of Tanzania in late November 1965. Seen here aboard Eagle in 1968 are Supermarine Scimitars, Blackburn Buccaneers, a Fairey Gannet AEW.3, de Havilland Sea Vixens and a Westland Wessex.

TAH ARCHIVE



(OAU) or the Soviet Union would fill the void. On December 1, 1965, he had very clearly stated his position:

"If we are to maintain the position that we have asserted, that Rhodesia is our responsibility, we should do everything in our power to prevent the stationing of other air forces in Zambia, wherever they may come from, as a means of providing air cover for President Kaunda".

After much diplomatic wrangling, Wilson persuaded Kaunda to request that an RAF squadron be stationed in Zambia. It was announced that "Her Majesty's Government has therefore expressed its willingness to meet President Kaunda's request to fly in to Zambia a squadron of Javelin aircraft, complete with radar equipment, to be stationed at N'dola, with the radar based at Lusaka and a detachment of the RAF Regiment to be stationed at both airports, and probably at Livingstone as well, in order to ensure the protection of the aircraft and the associated installations".

A contemporary report in *Flight* magazine notes that "four days before the RAF's move, the aircraft carrier *HMS Eagle*, unknown to the Rhodesians or the other African states, had in fact been off the coast of Tanzania following an alert to sail from Singapore on November 20. *Eagle* has the Buccaneers of No 800 Sqn, Sea Vixens of No 899 Sqn, flight-refuelling Scimitars, [Fairey] Gannets of No 849 Sqn and [Westland] Wessex helicopters of 820 Sqn". The Royal Navy was on hand to support the Javelins in the face of any resistance to their deployment.

Defensive patrols were flown from the aircraft carrier until it sailed for Aden on December 7, with planned future operations to be under the protection of the Javelins of the RAF's No 29 Sqn. To allay any fears that Britain was planning an invasion, Harold Wilson advised the Rhodesians that the Javelins were on their way.

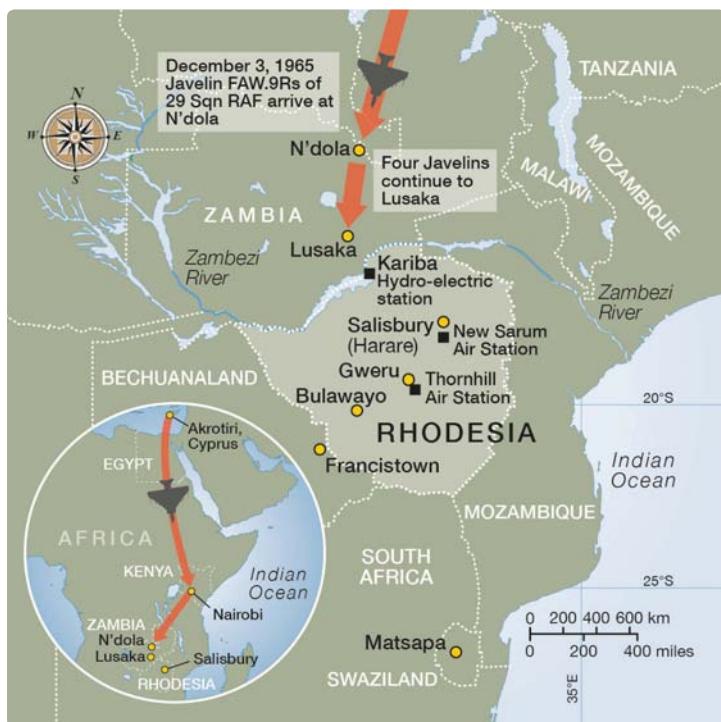
INTO ZAMBIA

Each loaded with two 230 Imp gal (1,046lit) droptanks on each wing and two 250gal (1,137lit) underfuselage auxiliary fuel tanks, nine Gloster Javelins under the command of Wg Cdr Kit Burge departed Akrotiri on Cyprus on December 1, 1965. Their first stop was Eastleigh Airport at Nairobi, before moving on to N'dola on December 3.

With no need to use their in-flight refuelling capabilities, No 29 Sqn's Javelin FAW.9Rs took the most direct route down through Africa, raising a protest along the way from the Egyptian authorities, having overflown Egypt without permission. A tenth Javelin, XH894, had gone unserviceable on the day of departure from Akrotiri and followed a few days later.

Simultaneously, and with only 12 hours' notice, 140 men of No 51 Sqn of the RAF Regiment were on their way to Zambia to provide protection for the aircraft and radar equipment that would be stationed at N'dola and Lusaka.

Rather bizarrely, Roger Blowers, Duty Officer at the RRAF's New Sarum Air Base, remembers being called by the Salisbury Flight Information Centre asking if he would like eight Javelins diverted into New Sarum. On the flight from



LEFT Zambia gained its full independence from Great Britain in October 1964, previously having been Northern Rhodesia, a British Protectorate and part of the Federation of Rhodesia and Nyasaland, which was dissolved in 1963. Also a British Protectorate from 1953, Nyasaland became an independent country, although technically still under Queen Elizabeth II, in July 1964, when it was renamed Malawi. Southern Rhodesia became just Rhodesia after its unilateral declaration of independence in 1965, to become Zimbabwe in 1980.

Map by MAGGIE NELSON

BELOW Javelins of No 29 Sqn muster at N'dola Airport in northern Zambia on December 4, 1965, the day after their arrival in country. The unit, whose motto is "Impiger et acer" — "Energetic and keen" — had converted from Meteor nightfighters to Javelins in late 1957, initially with FAW.6s before being upgraded to FAW.9s from the spring of 1961.

Eastleigh they had passed their point of no return and found the airfields at Lusaka and N'dola fogged in with zero visibility. New Sarum was the only viable diversion. Fortunately for both parties the mist lifted. Rhodesia's Salisbury radar controlled all airspace in the region, and on touchdown in Zambia the Javelin pilots signed off with "Goodbye and thanks, Salisbury" to which the air traffic controller replied "Goodbye RAF and enjoy yourselves".

On board the first support Handley Page Hastings to land at N'dola was Neville Ward of No 29 Sqn, who remembers "the copilot saying as we were en route from Wilson to N'dola that Salisbury air traffic control welcomed us and humorously warned us to 'behave ourselves!'".

The strong ties between Rhodesia and the UK had been reinforced during the Second World

War, when large numbers of RAF personnel were trained in Rhodesia as part of the Commonwealth Air Training Scheme. In 1958 the Rhodesians had flown missions from Aden in support of the British campaign against the coup in Iraq. The same year the two air forces shared displays above the annual Nairobi Agricultural Show, the venue for the East African debut of the Javelins of the RAF's All-Weather Development Squadron, which flew on to Salisbury afterwards for a day visit. Seven years later they faced a standoff with their erstwhile hosts.

In January 1960 a detachment of the RAF's No 8 Sqn paid a goodwill visit to Rhodesia with its new Hunter FGA.9 ground-attack fighters. The RRAF was so impressed that it ordered 12 Hunter F.6s refurbished to FGA.9 standard.

Under the captaincy of Gp Capt Flap Stapleford,

PHILIP JARRETT COLLECTION





ABOVE LEFT The Air Ferry Ltd ATL-98 Carvair just visible in the background of this photograph suggests that it was taken at Lusaka, where all civil operations in support of the RAF's show of force were centred. As all airspace in the region was controlled from Salisbury, air traffic controllers in Zambia relied on "the enemy" for the safe conduct of air operations during the crisis.

ABOVE RIGHT The Commanding Officer of No 29 Sqn, Wg Cdr Kit Burge (right), inspects a Firestreak air-to-air missile with a member of the groundcrew at one of the two bases used by the unit's Javelins in Zambia. Note the purpose-made basket to protect the infra-red homing head of the missile while on the ground. Kit Burge served as No 29 Sqn's CO from January 1965 to November 1966, spending much of that time in Zambia.

LEFT Ground support for the RAF's operations in Zambia was vital and President Kaunda put his small fleet of Douglas C-47s at the disposal of the British forces. Here sundry items of equipment are unloaded by RAF Regiment personnel from a Zambia Air Force C-47 at Lusaka in 1966. RAF AIR HISTORICAL BRANCH x 4



Carrying a pair of distinctive belly fuel tanks but no Firestreaks on its wings, a Javelin of No 29 Sqn is marshalled out for another sortie from N'dola. Most of the photographs taken during the unit's stay in Zambia show the Javelins without Firestreaks; whether this was because the missiles were subject to attrition from termites and thus kept locked away, or because the Firestreaks may have been deemed to be overkill for the task at hand, is unknown.



RAF AIR HISTORICAL BRANCH

ABOVE Leaving a heat trail in its wake, a Javelin of No 29 Sqn roars away for another patrol sortie over the Zambezi River. Two-aircraft practice interceptions were conducted on a regular basis during the regular Monday to Friday flying routine, pilots from the opposing air arms often waving at each other from their respective aircraft.

Rhodesia had competed in and won all five international shooting competitions at Bisley in 1965. In a prescient editorial the *Daily Telegraph* had reported the latter thus:

"We hope that the planners at the War Office have taken note of this result. These Rhodesians can pick the eye out of a turkey at 100yd."

At the time of the UDI there were numerous RRAF personnel on training courses or on secondment to the RAF. Only one, a former RAF member, decided to remain in the UK; the others were deported or returned to Rhodesia. Rhodesian Darryl Berlin had joined the RAF but his allegiance to home was clear-cut when the UDI was made. At the time Berlin was stationed at RAF Marham with Handley Page Victor tankers, and was on duty the night RAF Vulcans were put on immediate standby. He refused to assist in preparing the supporting Victors. Although he spent another six-and-a-half years in the RAF, he ultimately left owing to his divided loyalties.

Barrie Taylor was a serving officer in the RRAF while his father was a serving officer in the RAF. He was naturally concerned that the situation would escalate, but, as he says, "it never happened, thank God, but if it had I would have found myself on the opposite side to my Dad — and for that matter my nationality, as I was a British subject".

JAVELIN VERSUS ASSEGAI

In preparation for the UDI the Rhodesians had placed army units at the main bridges across the Zambezi river which divided Rhodesia and Zambia, and the RRAF flew regular patrols along the border. Ostensibly this was to thwart any insurgent invasion but plans had been drawn

up to counteract airborne landings as well as conventional ground engagements.

Operations for the RAF were difficult, as few of the services expected, or indeed required, by a modern jet squadron were available. Neville Ward recalls that the RAF groundcrew had to remove all of the upper fuel-tank panels and hand-pump fuel from 50gal (227lit) barrels directly into the Javelins' tanks as N'dola had no pressure-refuelling facilities.

Within six days of arriving at N'dola four Javelins were despatched to Lusaka. Two aircraft were kept on standby, one at 10min readiness and the other at 30min. Immediately after take-off on a daily patrol the RAF flight leader would contact the "rebels" in Salisbury for clearance to fly a border patrol along the Zambia/Rhodesia border.

The RRAF patrols continued after the arrival of the burly RAF interceptors. Air Chief Marshal Sir Jock Kennedy, commanding officer of RAF Bristol Britannia unit No 99 Sqn, recalled that "on a few occasions [Rhodesian] Hunters or Canberras met up with the Javelins to fly along the Zambezi in formation, with crews waving and taking photographs of each other".

Air defence radars and ancillary equipment were flown into Zambia by the Armstrong Whitworth Argosies of the RAF's Nos 114 and 267 Sqns, with an advance party from No 1 Air Control Centre (ACC) arriving in Lusaka on December 3. Equipped with American AN/TPS-34 air-transportable radar, No 1 ACC located suitable areas on the airfields for its equipment and by December 8 was ready to begin operations, having established an integrated air defence force in Zambia. Throughout No 1 ACC's deployment, which ended in September 1966, there were few

Looking somewhat weary, Javelin XH889/H taxies out for a sortie from N'dola in 1966. Like all the Javelins fielded by No 29 Sqn in Zambia, XH889 had been built as an FAW.7, but was upgraded to FAW.9R standard in 1959. By the end of April 1967 it had been put into storage with No 27 Maintenance Unit at Shawbury and a year later it was sold as scrap. RAF AIR HISTORICAL BRANCH



intercepts recorded, but the unit was kept busy providing Quick Reaction Alert (QRA) services.

Conditions at N'dola and Lusaka were primitive. At one point one of the Firestreak missiles mounted on a Javelin was destroyed by termites, which crawled up the undercarriage leg and made a feast of the missile's solid propellant. Accommodation was extremely basic, with the British forces being housed in buildings and exhibition rooms of the towns' showgrounds.

Gordon Foster was the engineer/site agent in charge of extending the 5,000ft (1,525m) runway at N'dola Airport to 8,000ft (2,440m) to accommodate flights in by de Havilland Comets. Construction work was undertaken during the day but each time an aircraft landed the crews had to down tools—something of a problem with up to eight Vickers Viscount flights a day, plus the activities of Zambian Air Force de Havilland Canada Caribous, RAF Blackburn Beverleys and Britannias and Canadian Lockheed C-130s flying oil in and copper out.

Foster recalls that the afterburners of the Javelins wrecked the work in progress and each morning

he would drive down to the end of the runway and repair those areas that had been kicked up after the 0600hr departure of No 29 Sqn's Javelins.

Groundcrew member Neville Ward remembers that "the only actual work we undertook was basic maintenance; once a week we dry-cycled the engines and replaced all of the [starting] blanks. Most of the time we were free to do whatever we wanted". Ward spent much of his time at the Kitwe Flying Club, providing his engineering skills, and in exchange was provided with a car, accommodation and non-stop parties.

Life was not all bad; there was much sport played and even an attempt from both "antagonists" to set up friendly matches. Indeed, the Sports Officer of No 29 Sqn received an invitation to play cricket against the enemy, but this was quashed by the CO. In sports kit donated by the Zambian Army, the RAF fielded cricket teams to play against local sides, such as the Indian Gymkhana and Rhodesia Railways, with results evenly spread. During the rugby season a team under the captaincy of Sgt Taff Hughes played rather unsuccessfully. With the squadron

Javelin FAW.9R XH892/B during its time in Zambia with No 29 Sqn, with full complement of wing-mounted long-range tanks for the flight back to Cyprus at the end of the unit's 1965–66 African sojourn. This aircraft was withdrawn from service and put into storage in April 1967; it still survives and is on display at the Norfolk & Suffolk Aviation Museum in the UK.
Artwork by JUANITA FRANZI/AERO ILLUSTRATIONS © 2016





LEFT Conditions at the RAF's bases in Zambia were primitive but adequate, although questions were asked in Parliament about poor accommodation for the British personnel. "As their deployment was an emergency operation, living conditions are naturally not ideal . . . the men at Lusaka and N'dola are accommodated in buildings on the local showgrounds which were not ready, but much work has been carried out subsequently" was the official response.

RAF AIR HISTORICAL BRANCH

BELOW Javelin XH890/M in the immediate aftermath of its landing accident at N'dola on February 6, 1966. The type being largely obsolete by this time, the stripped hulk was left behind when No 29 Sqn returned to Cyprus.

split between Lusaka and N'dola it was difficult to gather a full-strength side and initially the men found it difficult to play at altitude, but they did go on to win some games.

ATTRITION AND DESERTION

On returning to N'dola after a patrol on February 6, 1966, the pilot of fully armed Javelin XH890 saw the undercarriage indicators showing that only one mainwheel was locked down. Low on fuel and wanting to save the aircraft, he elected to make a forced landing on the grass beside the runway, and put the big fighter down on its single extended mainwheel and nosewheel. As the speed fell away, the unsupported wing dropped and the extended mainwheel collapsed. Thankfully the missiles remained inactive, the crew evacuated and XH890's flying days were over.

With the headline *Ground Duty Over For Old Aircraft*, the *Times of Zambia* of June 3, 1972, reported its final demise. The stripped airframe had been purchased by the N'dola Round Table and presented to a local children's playground. After a few years, parents felt that this "child's

activity centre" was dangerous, and it had been badly vandalised by the time the town's firemen were called in to remove it for scrap in 1972.

Another concern for the British effort was that of desertion. Glasgow newspaper *The Herald* reported in its May 23, 1966, issue that two RAF Senior Aircraftmen had crossed into Rhodesia 24hr before they were due to return to the UK. The men, Ronald Milne from Aberdeen and George Clark of Edinburgh, subsequently signed on as trainee firemen for Rhodesia Railways, more than doubling their RAF pay to £86 per month in the process. In a Reuters interview the men complained that they had initially been housed in a cotton shed in the showgrounds, and then in condemned police warders' quarters. They asserted that most of the RAF contingent thought they were wasting their time and they maintained that there would be opposition to taking up arms against the rebels. The latter was a popular view on either side of the Zambezi, but unlikely to hold water if a shooting war broke out.

Interestingly, in two articles in *The Post of Zambia*, journalist Gabriel Banda asserts that

T. DAVID VIA AUTHOR





ABOVE Carvair G-ASKG of Air Ferry Ltd was one of two leased from British United Air Ferries in December 1965 to deliver supplies from Dar-es-Salaam in Tanzania to Lusaka, where this photograph was taken, in support of British operations in Zambia. Both G-ASKG and G-APNH, the other leased Carvair, had returned to the UK by June 1966.

"RAF 'planes never flew into Rhodesia to stop the rebellion. Instead, some RAF pilots defected with Her Majesty's military 'planes and crossed to Smith's side". While it is true that the Javelins were never used in an attack on Rhodesia, no pilots or RAF aircraft defected to "the other side".

THE ZAMBIAN AIRLIFT

On Rhodesia's declaration of independence Britain swiftly imposed trade sanctions and banned oil shipments to Rhodesia. As all of Zambia's oil supplies were shipped through its southern neighbour, the British government undertook to airlift oil in to meet Zambia's requirements. The airlift, which commenced on December 19, 1965, was performed by the Britannias of Nos 99 and 511 Sqns and the Hastings of No 36 Sqn. Each Britannia flight was able to carry 2,250gal (10,230lit) of fuel, twice a day from Tanzania to Zambia.

Sir Jock Kennedy recalls the logistical problems of the airlift:

"The airfield at Lusaka was very small and when the Javelins arrived it was quite difficult to find space for the Britannias, so tight scheduling had to be worked out — but we coped. Flights into and out of Zambia were controlled by Rhodesian air traffic control, with whom we had a good rapport, and lots of humour and banter were exchanged. The runways at the two airfields were pretty short so full reverse-thrust had to be used, which caused quite a bit of damage to the back end of the 'Brits'. They were repaired back at Lyneham but it added cost to the operation."

The RAF was also supported by a number of civil operators, including BOAC, which operated Vickers VC10s into Lusaka. Seven aircraft

No 29 Sqn GLOSTER JAVELINS IN ZAMBIA, 1965-66

A TOTAL OF ten Gloster Javelin FAW.9Rs of the RAF's No 29 Sqn was despatched to Zambia in support of Britain's political opposition to Rhodesia's unilateral declaration of independence in November 1965. All were originally built as FAW.7s and converted to FAW.9s and again to FAW.9Rs, although none was fitted with in-flight refuelling probes for the operations in Zambia. The ten Javelins are listed below in serial order, along with the code letters worn on their fins.

XH712/K; XH762/F; XH847/G; XH848/L;
XH873/A; XH889/H; XH890/M; XH892/B;
XH894/E; XH899/D

were chartered from four British companies — Caledonian Airways, Lloyd International and Transglobe, each of which supplied a Britannia, and Air Ferry Ltd, which fielded two Douglas C-54 Skymasters and a pair of Aviation Traders ATL-98 Carvairs. The civilian carriers withdrew in July 1966 and the RAF terminated the airlift on October 31 the same year, by which time 3.5 million gal (16m lit) of oil had been delivered to the Zambian government, with more than 10,000 hours flown.

In an effort to acquire some influence over the rebel colony the BBC established a radio station in Francistown in the British protectorate of Bechuanaland (Botswana from September 1966), about 60 miles (95km) from the Rhodesian border. To protect the station a Company of the British Army's 1st Battalion, The Gloucestershire Regiment, was airlifted in on December 1, 1965.



MIKE HOOKS COLLECTION

ABOVE Javelin XH848/L at RAF Khormaksar in Aden with four long-range fuel tanks after having completed the first leg of its journey back to its base at Akrotiri on Cyprus from Zambia in September 1966. On December 14, 1966, this aircraft crashed when it stalled in the slipstream of another aircraft on final approach into Akrotiri.

The troops, equipped with scout cars, would practise "war games" against the station.

Regular flights were made by the Argosies of the RAF's No 105 Sqn on troop-rotation duties from Matsapa in Swaziland to Francistown. In November 1966 four Argosies were used for the evacuation of a battalion of the 1st Royal Irish Fusiliers from Swaziland to Durban in South Africa, where they were embarked in HMS *Fearless* for transit to Aden, and then back to the UK. As the British Government increased sanctions on Rhodesia, the reactions of South Africa and Portugal, the latter being the colonial power in Mozambique, was uncertain. It was felt that the British battalion could become vulnerable if these countries, friendly to Rhodesia, decided to act on behalf of their neighbour.

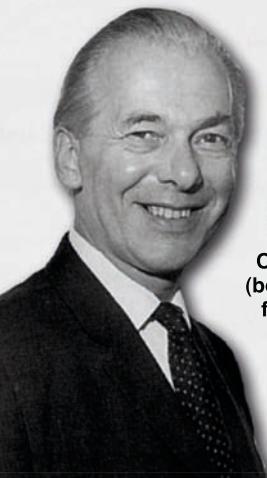
The Javelins of No 29 Sqn and Bristol Britannia XM518 of RAF Transport Command share the limited space at Lusaka in 1966. Despite Wilson's assertion that year that economic sanctions would see the matter resolved "within weeks rather than months", the issue of Rhodesia's government continued to be a thorny one in British politics throughout the next decade.

RAF AIR HISTORICAL BRANCH

Operation *Aloe*, the withdrawal of British forces from Zambia, began in August 1966. Between August 23 and September 5 that year, RAF Masirah, off the coast of Oman, operated virtually non-stop, managing 128 aircraft movements in 13 days. The base transited 1,329 passengers, handled 80,000lb (36,285kg) of freight and dispensed 103,425gal (469,360lit) of aviation fuel. For their part, the Javelins returned to Akrotiri via Aden, having flown a total of 1,500hr over ten months of operations in Zambia.

ACKNOWLEDGMENTS The Editor would like to thank Lee Barton at the Royal Air Force Air Historical Branch for his invaluable assistance with the supply of images for this feature. For more information about the AHB visit the website at www.raf.mod.uk/ahb. Twitter @AHB_RAF





The John Stroud Archive

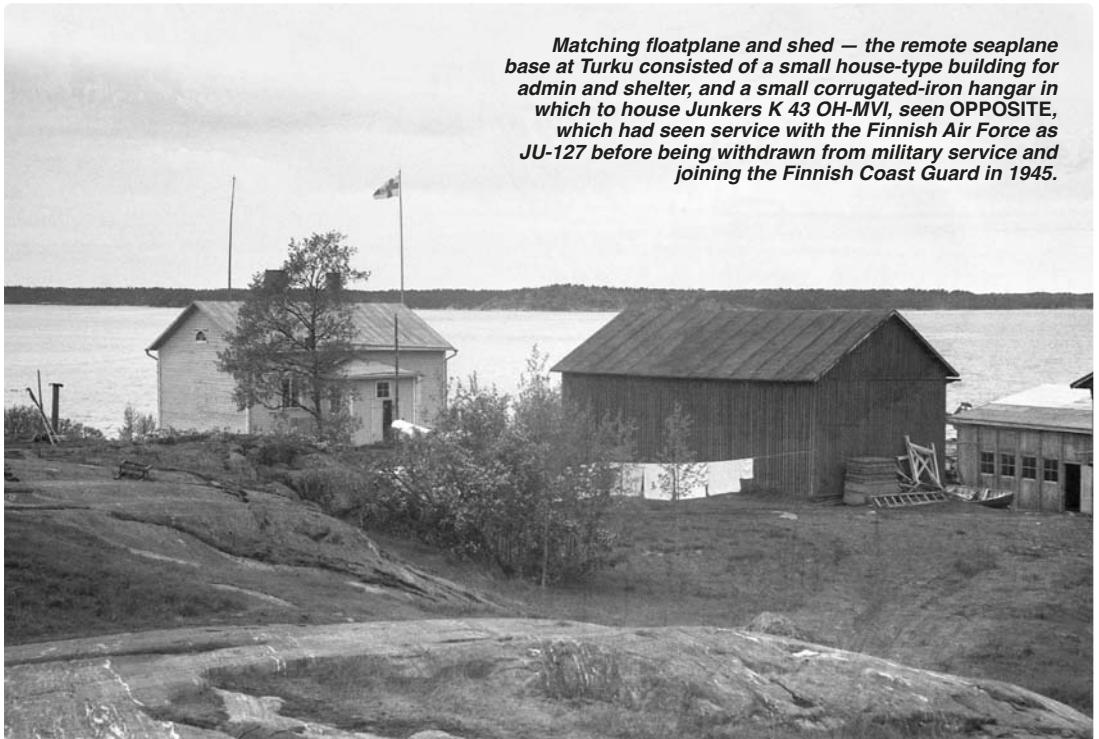
One of Britain's most respected aviation journalists and authors, John Stroud (born April 3, 1919) joined Imperial Airways aged 14. Six years later he became a freelance aviation writer and in 1963 was appointed General Editor of the definitive Putnam series of aeronautical books. Also a talented photographer, John continued to contribute articles to the British aviation press until his death in March 2007. In 2014 a substantial part of John's archive, including numerous rolls of previously unseen 35mm film, was acquired by A Flying History Ltd and forms the basis of this regular *TAH* series

The Finnish Line



During a 1949 visit to Finland, John made a beeline for the floatplane base at Turku on the south-west coast — from where one of the country's two remaining 1920s-vintage Junkers K 43s was still operating with the Finnish Coast Guard. We accompany John's photographs from Turku with a look at the distinctive transport's career in the "land of a thousand lakes"





Matching floatplane and shed – the remote seaplane base at Turku consisted of a small house-type building for admin and shelter, and a small corrugated-iron hangar in which to house Junkers K 43 OH-MVI, seen OPPOSITE, which had seen service with the Finnish Air Force as JU-127 before being withdrawn from military service and joining the Finnish Coast Guard in 1945.

THROUGHOUT HIS LONG and illustrious career as one of Britain's most prolific and respected aviation journalists, John Stroud [no relation! — Ed] visited Finland numerous times, always finding plenty of items of interest on which to report from the "land of a thousand lakes". Covering nearly 100,000 square miles of sparkling clear lakes and crystalline forest pools, Finland was quick to see the advantages of aviation, its first military aircraft entering service with the newly-independent nation (from Russia) in early 1918.

Civil aviation activity followed within a few years, the establishment of independent airline Aero O/Y during 1923–24 creating the foundation for what would become the nation's state airline, Finnair. Significantly, the founder of Aero O/Y, Bruno Lucander, brokered a shrewd arrangement with German aircraft manufacturer Junkers, which would provide aircraft and technical support in return for a 50 per cent stake in the new airline. It was to be the beginning of a relationship between the Finns and Junkers that would continue for decades, through peace and war, with Junkers aircraft operating both alongside and against the Fatherland while in Finnish service.

Thus it was that when British civil aviation specialist John Stroud made a trip to Scandinavia during May–June 1949 he made a point of visiting Turku, on Finland's south-west coast, to see one of the last two Junkers K 43s still

in service with the Finnish Coast Guard. The relatively few photographs he took of the distinctive floatplane pay tribute to the rugged, robust abilities of the pre-war design — and are, we believe, published here for the first time.

THE JUNKERS W 33/34

First produced in 1926, the W 33 and W 34 were concurrent developments of Hugo Junkers' innovative F 13 six-seat single-engined monoplane of 1919, which, by the mid-1920s, was serving three-quarters of Europe's air transport routes. Production of the F 13 continued until 1930, but by 1925 Junkers was looking to develop the type and rectify some of the problems that had come to light during its service, not least of which was unsatisfactory longitudinal stability.

The announcement of a competition to be held at Warnemünde in July 1926 to find a new German seaplane lent impetus to Junkers' already-stated desire to improve the F 13, and designer Hermann Pohlmann was put in charge of refining the type to meet the requirements of the competition. Accordingly, two airframes were taken from the F 13 production line at Dessau and adapted to incorporate a new longer forward fuselage and revised tail surfaces while retaining the wings, rear fuselage, tailplane and basic undercarriage of the F 13.

One of the prototypes was fitted with a 310 h.p. six-cylinder water-cooled inline Junkers L 5 engine and designated W 33 (W for *Wettbewerb*



ABOVE The primitive Coast Guard station at Turku as seen over the broad corrugated wing of OH-MVI. Turku is the oldest city in Finland's history, its position on Finland's south-west coast having made it an important strategic location. BELOW A puff of smoke issues from 'MVI's Hornet engine as it is started up for a sortie from Turku.

— competition), while the other was powered by an uncowled 480 h.p. Bristol Jupiter VI air-cooled radial engine built under licence by Gnome-Rhône in France, to become the W 34. The new cargo/transport prototypes were similar to the F 13, although the latter's distinctive "hump" gave way to a flatter top fuselage. The open cockpit was retained, with side-by-side seating for the pilots.

By mid-June 1926, the W 33 prototype was ready for its first flight, Junkers chief pilot Wilhelm Zimmermann taking the aircraft aloft on June 17. The same pilot flew the radial-engined W 34 on its maiden flight nearly three weeks later, on July 6. The two new types offered increased payload over the F 13 and a much larger uninterrupted cargo bay, although their handling was not significantly different from that of their predecessor.

Several record flights by the new type followed, including the first east–west non-

stop transatlantic flight by a heavier-than-air machine, completed by Hermann Köhl, Ehrenfried Günther Freiherr von Hünefeld and James Fitzmaurice in W 33 D-1167 *Bremen* in April 1928, and a remarkable altitude record of 41,795ft (12,739m) in May 1929. Range and endurance class records were set by the W 33 during 1927–28, and the W 34 set a new class speed record during the early summer of 1927.

W 34 BECOMES K 43

By 1928 a production rate of three W 33s per month had been established at Dessau, with W 34s being completed as orders dictated — provided the order had been received at least two months before the airframe was to be finished. With various modifications introduced as production continued, including revised wings and various powerplant installations, some 56 W 33 and W 34s had been sold to customers all over the world by the end of 1929,





ABOVE Although of indifferent quality, this rare photograph of one of the Finnish K 43s in flight shows the type's broad-chord tapered square-tipped wings of all-metal construction with narrow unbalanced ailerons. The wing's girder framework consisted of tubular spar booms braced partly with tubes and partly with sheet-metal pressings.

from China to South America to the USA.

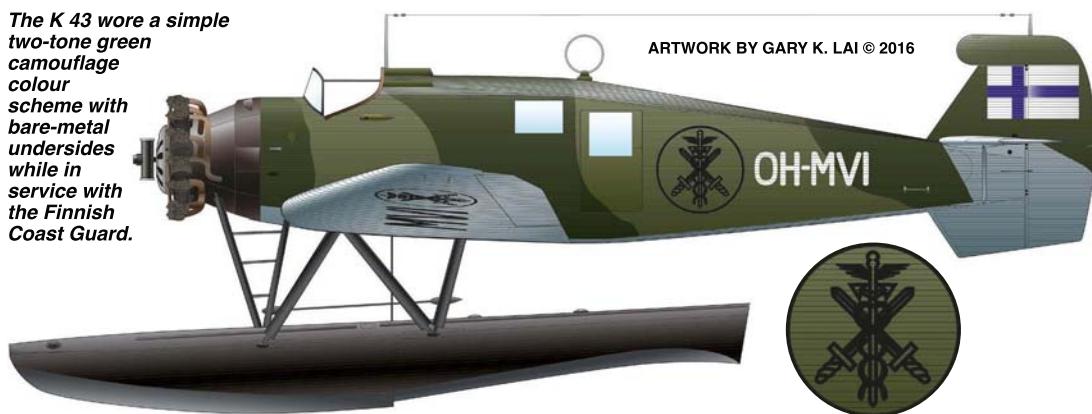
In the autumn of 1926 the floatplane undercarriage of the W 33 prototype was replaced with a wheeled arrangement and sent to Sweden to be evaluated by *Flygvapnet* (the Swedish Air Force) as a prospective military type. The Swedes were unimpressed, but noted that the type could be fitted with a machine-gun and a camera, before returning the W 33 to Dessau at the beginning of February 1927. Junkers persisted, however, and persuaded the government of Shanxi Province in China to purchase one military W 33, which was delivered in the summer of 1930. Additionally a number of militarised W 34s, designated K 43s, were sold to Argentina, Bolivia, Colombia, Finland, Portugal and Venezuela. The K stood for *Kriegsflugzeug* (military aircraft), and the civil type number was simply reversed, in line with Junkers' military designation convention.

The Finns initially ordered a single W 34, fitted

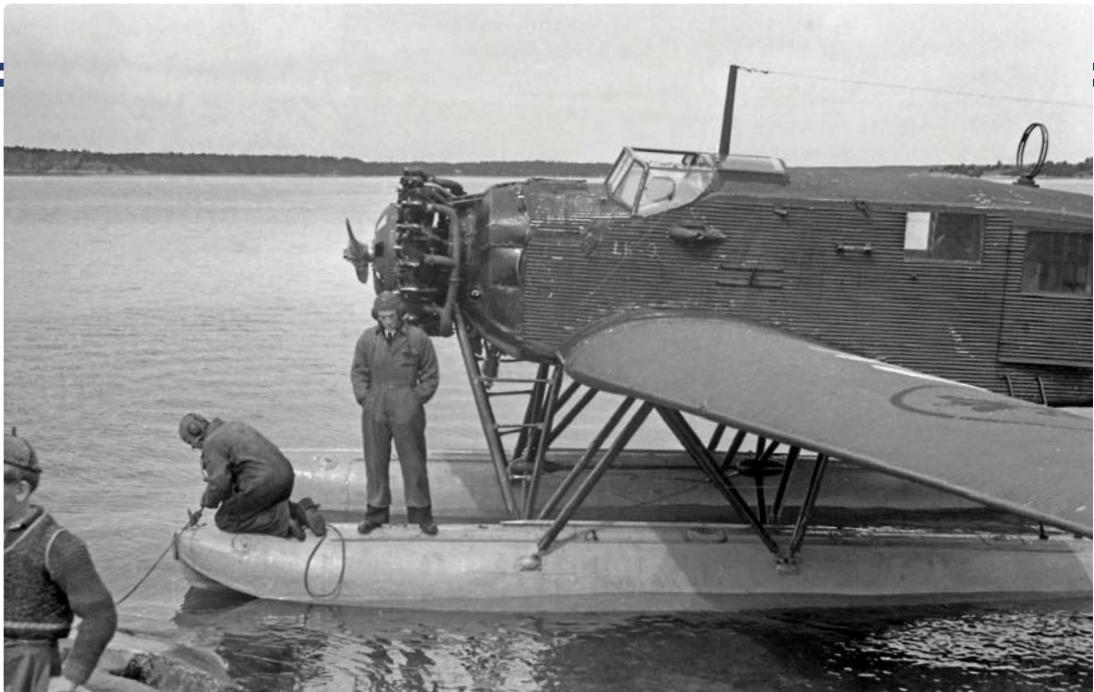
with a 420 h.p. Jupiter IV and supplied with both wheeled and float undercarriage equipment, in 1929. It was completed with the floats and made its first flight, at Dessau, on January 25, 1930, in the hands of Wilhelm Zimmermann. Delivered to Finland that September, it was put on strength with Maritime Air Station No 1 at Santahamina and given the military serial JU-122.

The same month Finland signed a contract for six fully-militarised K 43s, to be powered by 480 h.p. Gnome-Rhône Jupiter VIIs. These were to be equipped with one forward-firing machine-gun, two 0.303in Lewis machine-guns on flexible mounts in the two dorsal positions, one machine-gun mounted on the fuselage floor to fire through a ventral hatch, and racks for 880lb (400kg) of bombs. Components and sub-assemblies were despatched from Dessau to Swedish company Flygindustri's factory at Limhamn, near Malmö, where the aircraft were assembled and finished in Finnish national

The K 43 wore a simple two-tone green camouflage colour scheme with bare-metal undersides while in service with the Finnish Coast Guard.



ARTWORK BY GARY K. LAI © 2016



ABOVE By the time of John Stroud's visit to Turku in the late spring of 1949, only two of the three K 43s used by the Merivartiolaitos (Finnish Coast Guard) were still in service; OH-MVH (c/n 2703) at Helsinki and OH-MVI (c/n 2707) at Turku. Note the Coast Guard sub-serial "LK-9" just visible on the forward fuselage beneath the cockpit.

markings. The six K 43s were given the serials JU-123 to JU-128, before being test-flown, dismantled and delivered by rail to Finland, where they arrived on April 9, 1931.

Having standardised on the Bristol Jupiter engine, the Finnish air arm, *Suomen Ilmavoimat*, found to its dismay that its French-built powerplants were somewhat less than reliable, reportedly owing to poor workmanship and low technical standards at the French factory. As a result JU-127 was returned to Limhamn in March 1932 to be fitted with an American 575 h.p. Pratt & Whitney R-1690 Hornet instead. After JU-127's return that June, the other five K 43s were re-engined with Hornets in Finland over the next ten months, as was W 34 JU-122.

INTO COMBAT

Four of the K 43s joined 1 *Erillinen Merilentoalivue* (No 1 Maritime Detachment) at Viipuri (now Vyborg in Russia) on the Karelian Isthmus, the other two joining the *Merilentoasema* (Maritime Flying Station) at Santahamina, near Helsinki. By 1933, all but one were serving with *Lentoasema 6* (Flying Station No 6) at Viipuri. On July 30, 1935, JU-123 and JU-125 collided in mid-air at Suur-Merijoki, near Viipuri, during a rehearsal for a large-formation air display item, resulting in the death of five of the seven aircrew, two managing to bale out safely.

In January 1938 the air stations were reorganised to become *Lentorykmentti* (LeR —

aviation regiments), and one of these, LeR 1, based at Suur-Merijoki, included *Lentolaivue 16* (LLv 16 — No 16 Sqn), which retained the four remaining K 43s and the sole W 34 on strength from 1938.

With war in Europe having been declared in the wake of Germany's invasion of Poland in September 1939, and with the Soviet Union ominously mobilising forces on the Russo-Finnish border at the same time, Finland unsurprisingly began preparing for war, camouflaging its aircraft and dispersing them to tactically favourable locations. On November 30 the expected attack on Finland by the Soviet Union came. The K 43s were sent to Sortavala on the northern tip of Lake Ladoga for reconnaissance and general duties, but as the Soviets continued to push through the Karelian Isthmus the K 43s were redeployed to Kajaani to undertake reconnaissance missions over northern Finland.

On December 24, 1939, K 43 JU-126 was shot down by a Soviet Polikarpov I-15bis, the only K 43 loss during the three-month Winter War, which was brought to a close with the signing of the Moscow Peace Treaty on March 12, 1940. Finland had been forced to cede large parts of its territory to the Soviet Union, but retained its independence and established an international reputation as a formidable foe on its home soil. On March 16, JU-127 was involved in an accident at Pori, but the damage was deemed repairable

JUNKERS K 43 DATA

Powerplant 1 x 480 h.p. Gnome-Rhône Jupiter VI air-cooled radial engine; later 1 x 575 h.p. Pratt & Whitney R-1690 Hornet air-cooled radial engine

Dimensions*

Span	17·75m	(58ft 2½in)
Length	10·8m	(35ft 5in)
Height	3·8m	(12ft 6in)
Wing area	43m ²	(463ft ²)

Weights

Empty	1,709kg	(3,768lb)
Loaded	2,900kg	(6,393lb)

Performance

Maximum speed	225km/h	(140 m.p.h.)
Cruising speed	195km/h	(121 m.p.h.)
Landing speed	110km/h	(68 m.p.h.)
Climb to 1,000m (3,280ft)	3½min	
Service ceiling	6,200m	(20,300ft)
Normal range	700km	(435 miles)

Armament

1 x fixed forward-firing machine-gun; 2 x 7·7mm (0·303in) Lewis machine-guns on flexible mounts in dorsal positions; 1 x floor-mounted machine-gun to fire through ventral hatch

Bombload 400kg (880lb)

* All figures for K 43 floatplane with Hornet engine

and the machine was returned to service.

Following the cessation of hostilities with the Soviets, W 34 JU-122 and K 43s JU-127 and JU-128 were sent to Mariehamn on the island of Åland in the Gulf of Bothnia to serve with *Täydennyslentolaivue 35* (T-LLv 35 — replenishment squadron), although JU-122 and JU-128 were transferred to the *Merivartiolaitos* (MVL — Finnish Coast Guard) in October 1940, when they received their civil registrations, OH-MVG and OH-MVF respectively. They were both, however, returned to front-line service in 1941.

The uneasy peace brought by the Moscow treaty did not last long, and on June 25, 1941, hostilities between Finland — which saw in Germany's attack on Russia an opportunity to reclaim its lost territory — and the Soviet Union broke out in the opening shots of what the Finns would refer to as the Continuation War.

AIR AMBULANCE DUTIES

The remaining K 43s were put on strength with a new unit, LLv 15, and deployed to Paltamo in central Finland, where their rugged simplicity would come into its own on air ambulance duties. By the end of February 1942, when the unit was disbanded, the K 43s had evacuated some 1,600 wounded soldiers from the front. On November 16, 1941, W 34 JU-122 suffered engine failure on take-off from a lake and was written off in the ensuing hard landing. Happily all the

crew and passengers escaped unhurt.

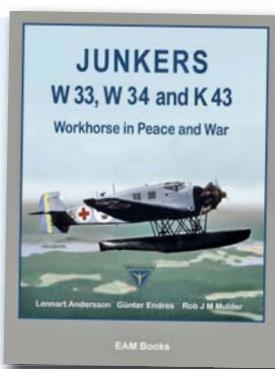
The three remaining K 43s were subsequently used in support of commando patrols behind enemy lines, a task to which they took with aplomb, although JU-127 crashed during a take-off at Tampere in April 1942. It was once again deemed to be repairable, however, and was again returned to service. By 1944 all three had been relegated to training duties. The Finns were by no means finished with the type, however, and in January 1944 requested that Germany supply five more BMW-engined W 34s for advanced navigation and other training duties. Given the serials JU-131 to JU-135, these arrived in Finland in May 1944.

In September 1944 Finland and the Soviet Union negotiated an armistice, which came into effect on the 19th, and which called for the expulsion of all German troops from Finland, resulting in what was known as the Lapland War. The K 43s were once again used for mail, transport and commando support duties throughout the conflict, which lasted until Germany's capitulation in April 1945.

Two months later, K 43s JU-124, JU-127 and JU-128 were withdrawn from military service and put on strength with the MVL with the civil registrations OH-MVH, OH-MVI and OH-MVF respectively. The first was sent to Helsinki; OH-MVI operated from Turku and OH-MVF was used by the MVL at Vaasa on the west coast of Finland. Fuel was scarce, however, and Finnish aviation was subject to a general flying ban imposed by the Soviet Control Commission, so the K 43s were restricted to urgent frontier patrol and air ambulance missions. During 1946–47 the aircraft were used to deliver mail to remote islands in the Vaasa archipelago.

By early 1950, after nearly two decades of sterling service through three conflicts with two major powers, Finland's distinctive, dependable K 43s had all been withdrawn from service — the end of the road for a type that had saved many more lives than it had taken. **NS**

The vast majority of the information in this article came from the excellent *Junkers W 33, W 34 and K 43: Workhorse in Peace and War* by Lennart Andersson, Günter Endres and Rob J.M. Mulder, published by EAM Books (ISBN 978-0-95737-441-6). For more info, see review on page 123.



FOXABLE FOUR

By 1950 fighter jets had been in front-line operational service for several years, but none had yet made a non-stop transatlantic crossing. Experiments into the British probe-and-drogue system soon kindled the interest of the USAF, and a plan for the first non-stop flight across the Atlantic by jet fighters was set in motion. **BRIAN GARDNER** describes the resulting epoch-making flight which engendered — literally — far-reaching consequences

"Up a bit . . . right a bit." The view of the hose and drogue trailing from a Boeing B-29 from the receiver aircraft's cockpit during trials in 1949–50. During February–March 1949 the USAF undertook a non-stop round-the-world flight using Flight Refuelling Ltd's "looped hose" system, Boeing B-50A Lucky Lady II flying a distance of 23,018 miles (37,189km) in 94hr 1min with the help of a pair of KB-29 tankers. The looped hose system was found to be unsatisfactory, however, and was replaced by the probe-and-drogue concept, as seen here.

VIA AUTHOR

"All history indicates that speed of movement is a cardinal military principle. To gain full value from that speed it must be maintained, without hesitation, from point of departure to the combat zone. Thus the military value of the jet fighter may depend upon its power to leap over oceans and continents . . ."

Capt Norman Macmillan MC AFC, December 1951





ON SEPTEMBER 22, 1950, two Republic EF-84E Thunderjets of the USAF made the first non-stop transatlantic crossing by jet fighters; all previous transatlantic flights had been made via Keflavik in Iceland and Bluie West 1 in Greenland. These Thunderjets were part of Project *Outing*, an evaluation of the British probe-and-drogue aerial refuelling system invented by Flight Refuelling Limited (FRL).

Although military air-to-air refuelling (AAR) experiments had been undertaken in the USA in the 1920s and during World War Two, the technique had not been adopted. However, in the post-war world new threats emerged and the higher fuel consumption of turbojet engines limited flight endurance. Consequently the subject of AAR was revisited by the USAF in the late 1940s for both bomber and fighter applications; in the first case to give medium-range bombers a greater strategic reach and, in the second, to increase the endurance of jet fighters. Several novel methods of fighter range extension were considered, including refuelling in flight.

SIR ALAN GOES TO WASHINGTON

As FRL had been developing flight refuelling equipment and methods since the 1930s, the company was in a good position to deliver a proven system to the USAF. As the requirement was urgent, an initial order for "looped hose" equipment was placed for Boeing B-29 bombers

ABOVE Flight Refuelling's Tom Marks holds the company's snub-nosed Avro Lancaster, wearing *B Conditions* markings G-33-2, steady over Brownsea Island in Dorset as Pat Hornidge takes on fuel in Gloster Meteor III EE397 on August 7, 1949, when the Meteor remained aloft for 12hr 3min to set a new world endurance record. PHILIP JARRETT COLLECTION

and tankers pending the introduction of an improved system being developed by Boeing.

During a visit to the USA in October 1948 to check progress of the bomber installation, FRL chairman Sir Alan Cobham had discussions with the Director of Research and Development at the Pentagon and with senior officers from Air Materiel Command. When asked about a method for refuelling fighters, Cobham was evasive but promised a demonstration in the spring of 1949, when senior officers would be visiting the UK.

To that end, several fighter refuelling schemes were examined by FRL during the winter of 1948–49, these being variations of the pre-war looped-hose and "crossover" methods, with automatic coupling equipment in the fighter. By March 1949 the probe-and-drogue system had evolved, but, as there was little RAF interest in fighter refuelling at that time, FRL had to use company funds for initial development.

The Ministry of Supply (MoS) was persuaded to loan weary Gloster Meteor III EE397 for trials, and the first probe/drogue contact was made on April 24, 1949, when the Meteor and trials Avro



Lancaster tanker G-33-2 connected while aloft. A few days later the promised demonstration was given to visiting USAF officers.

During the visit Cobham suggested that a B-29 and an American fighter be delivered to the FRL base at Tarrant Rushton in Dorset, where the company would produce a prototype set of equipment. This could be followed by 20 sets of equipment for installation by FRL subsidiary Flight Refueling Inc in America. Although no funds were allocated for this scheme, the USAF was interested in testing the probe-and-drogue system, as Boeing's "flying boom" refuelling concept was still under development.

During subsequent discussions with Col G.F. Smith, Chief, Aircraft Section, Engineering Division at Wright-Patterson Air Force Base, Cobham was asked for a cost proposal for the installation of refuelling equipment in three B-29s and one Lockheed F-80. After further discussions and refuelling demonstrations at Tarrant Rushton, the USAF placed a contract with FRL in December 1949 for the modification of six aircraft.

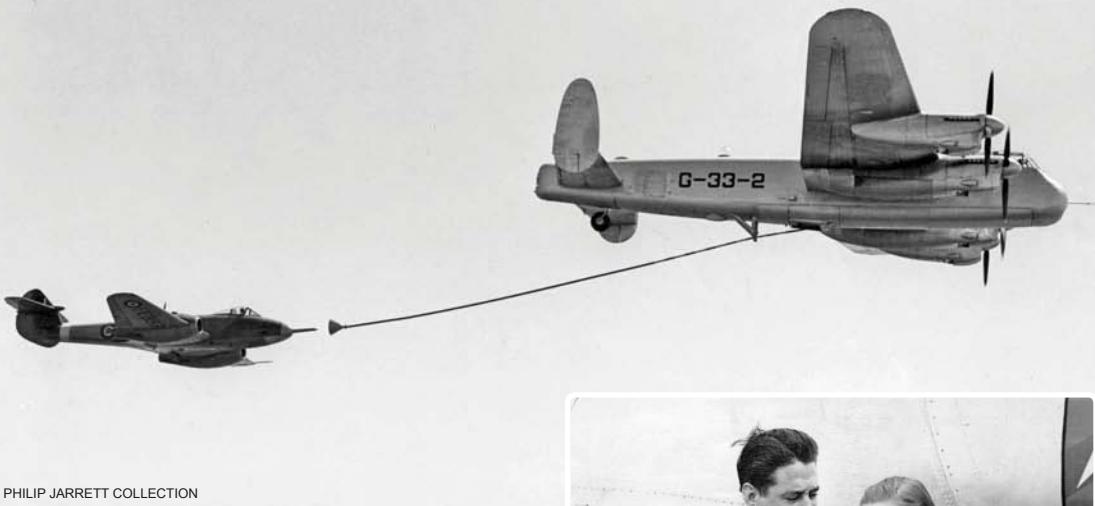
The USAF's Project *Outing* (originally *Layette*) involved the modification of six aircraft for probe/drogue refuelling: one single-point KB-29 tanker; one three-point KB-29 tanker; two KB-29 receivers and two F-84E receivers. Accordingly, two F-84Es (49-2086 and 49-2091) were delivered to Tarrant Rushton on October 24, 1949, and work began on modifying the fuel system and incorporating

ABOVE A mock-up of the F-84E's fuel system was built at Tarrant Rushton to determine the optimum position of the fuel probe. In view of future nose-mounted radar installations, a nose probe was deemed undesirable, and, after considering a tip-mounted probe, the FRL team settled on fitting a 4ft 6in (1.4m)-long probe 128-8in (3.27m) from the fuselage centreline.

a fixed refuelling probe, located at mid-span on the port wing after tests to determine optimum probe position. However, this proved to be more difficult than anticipated as FRL had been unable to examine an F-84E beforehand.

Following modification and ground refuelling, flight tests began in August 1950 with the single-point KB-29 and the Lancaster tanker. The contract included transatlantic trials with the F-84Es after completing tests in the UK. This would involve a non-stop flight from RAF Manston in Kent to Mitchel Air Force Base (AFB) on Long Island, New York. The pilots for these flights would be Col David C. Schilling and Lt-Col William D. Ritchie, while Lt-Col Albert Schinz would monitor and co-ordinate the flight and supporting services from the Pentagon. As this would be the fourth transatlantic flight by USAF jet fighters it was designated *Fox Able Four* (Fighter, Atlantic, No 4).

Schilling was enthusiastic about the possibilities of fighter refuelling as he had led P-80s of the 56th Fighter Wing across the Atlantic in the first west-east crossing by jet fighters in July 1948 (*Fox Able One*). The same month six de Havilland



PHILIP JARRETT COLLECTION

ABOVE Meteor EE397 approaches the drogue during the record endurance flight in August 1949. Pat Hornidge flew a continual orbit over Bristol, Devon and Dungeness in the Meteor, while Tom Marks circled the Isle of Wight in the Lancaster.

RIGHT Colonel David C. Schilling and his wife Georgia in July 1948, two days before the 56th Fighter Group CO led 16 Lockheed F-80s across the Atlantic via Greenland and Iceland for Operation Fox Able, the first transoceanic jet fighter deployment. On June 29, 1949, Schilling flew Meteor EE397 in an aerial refuelling trial.

Vampire F.3s of the RAF's No 54 Sqn had made an east-west transatlantic crossing, staging via Stornaway, Iceland and Greenland. Schilling witnessed the demonstrations at Tarrant Rushton and had flown the Meteor receiver, making contact with the Lancaster tanker.

The purpose of the transatlantic flight would be to evaluate the probe-and-drogue system, as well as investigate techniques for maximum-range missions, develop procedures for air-sea rescue services and weather stations and communications systems, and check the adequacy of radio aids. Three in-flight refuellings would be made. The first was to be over Prestwick by Lancaster G-33-2 flown by FRL pilot Tom Marks; the second over Keflavik, Iceland, by FRL's Lincoln RA657, to be flown by Pat Hornidge, also of FRL, and the third over Goose Bay, Labrador, by the single-point KB-29 tanker (44-69704) flown by USAF Col William Bacon and crew. The USAF's Air Rescue Service assigned six aircraft, codenamed *Duckbutt*, equipped with droppable lifeboats, to patrol the over-water legs of the flight, and additional aircraft and ships were positioned along the route for weather reporting.

While the Lancaster was owned by FRL for test work, the Lincoln was on loan to the company for development purposes under the provisions of an MoS contract. As this was due to expire on June



16, 1950, permission was requested to use RA657 for refuelling the USAF aircraft over Iceland. To add weight to the request it was mentioned that Col D.C. Schilling, Deputy Chief of Air Staff Plans and Operations, USAF, was involved in the project and that "we understand . . . that the (Air Force) Secretary, Mr Symington, is interested".

The Air Ministry doubted that the project would assist work being done for the MoS and permission was denied. Flight Refuelling Ltd then applied for a contract extension to complete tests with a Meteor IV, noting that the USAF work was more extensive and that experience gained by this dollar contract would be of great benefit to the RAF. Eventually the MoS relented and agreed that the Lincoln could be flown to Iceland for use in the transatlantic flight by USAF fighters.

Plans for a record attempt for the fastest time between London and New York were mooted but cancelled when Gen Hoyt Vandenberg, Chief of

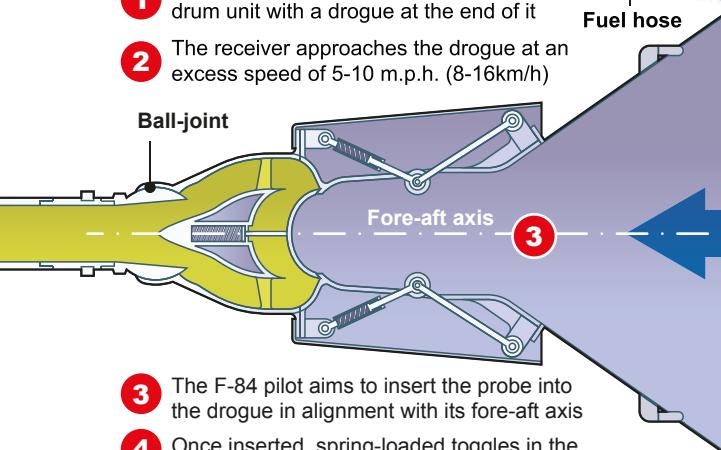
Fill 'er up: how it worked

Avro Lincoln tanker



- 1 The tanker trails a fuel hose from a drum unit with a drogue at the end of it
- 2 The receiver approaches the drogue at an excess speed of 5-10 m.p.h. (8-16km/h)

Fuel hose



- 3 The F-84 pilot aims to insert the probe into the drogue in alignment with its fore-aft axis
- 4 Once inserted, spring-loaded toggles in the drogue engage a groove in the probe, holding it in place
- 5 The F-84 pilot operates a hydraulic or pneumatic control, opening the probe's fuel valve ...
- 6 ... which forces open the drogue's spring-loaded shut-off valve, allowing fuel to flow. Once fuel transfer is complete the pilot closes the valves and withdraws the probe

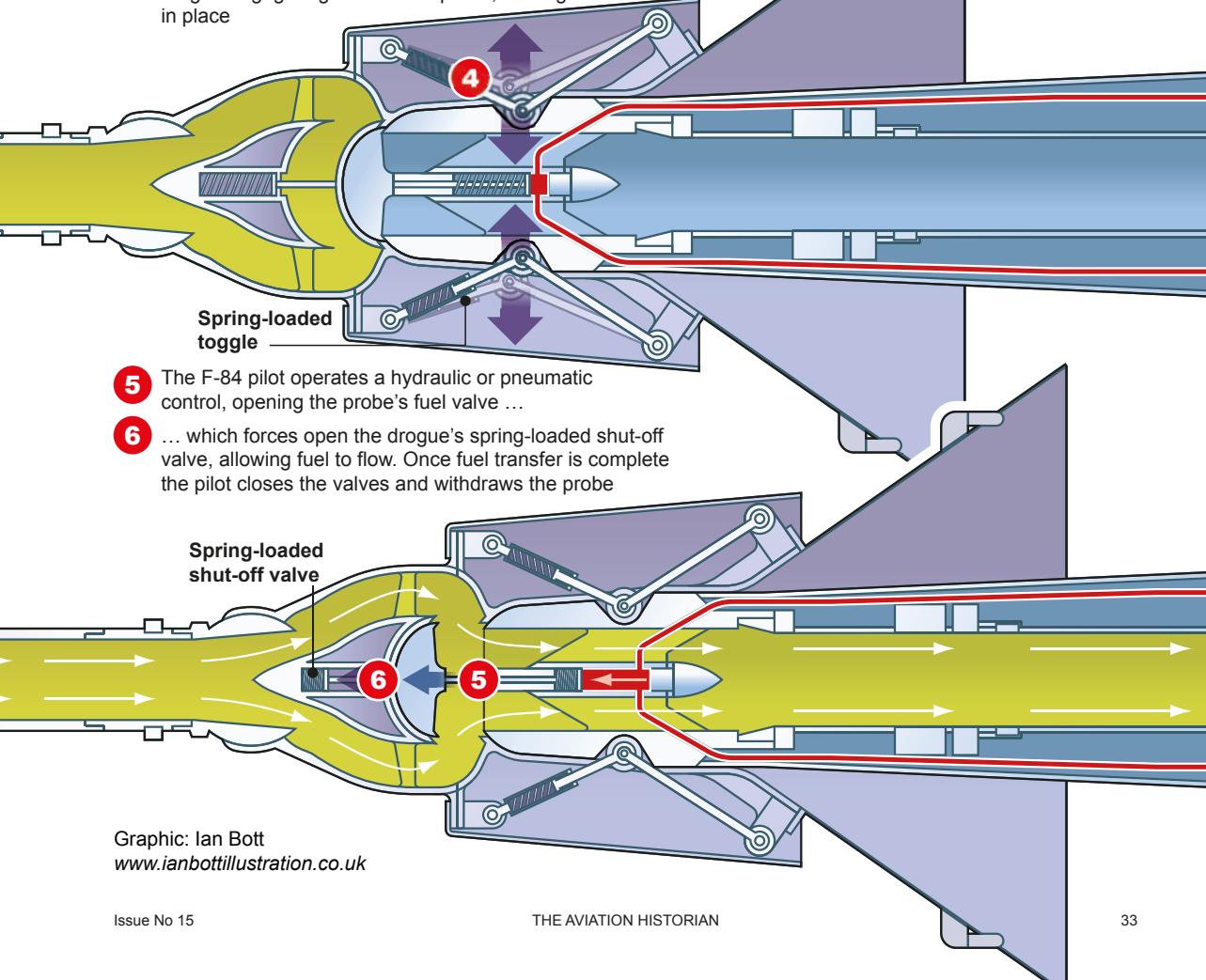
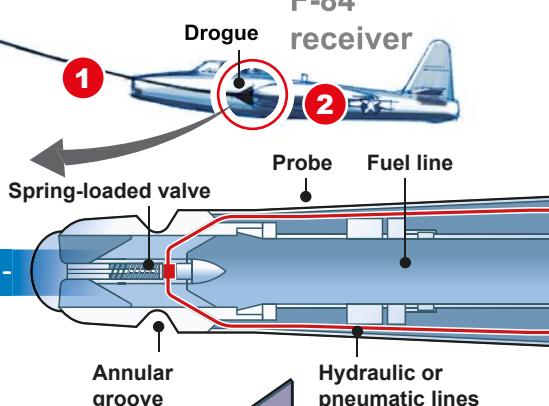
This illustration by IAN BOTT shows an early version of Flight Refuelling Ltd's hose-and-drogue system. Later developments of the concept incorporated a greater level of sophistication, with automatic shut-off valves etc.

F-84 receiver

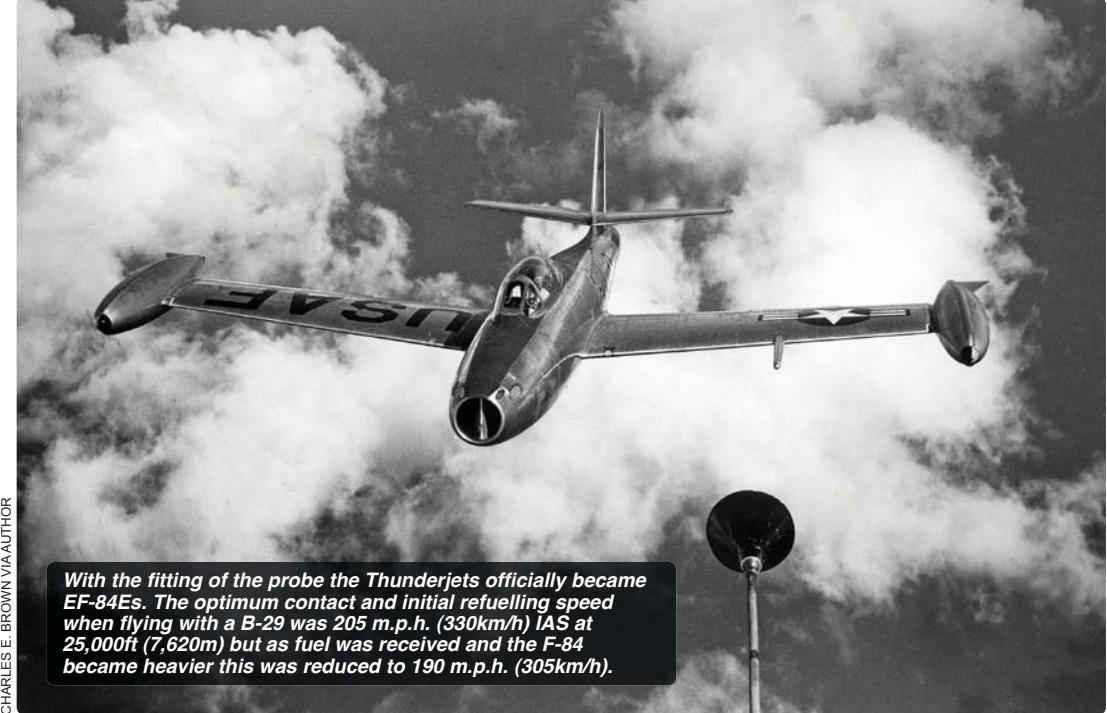
Drogue

Probe

Fuel line



Graphic: Ian Bott
www.ianbottillustration.co.uk



CHARLES E. BROWN VIA AUTHOR

With the fitting of the probe the Thunderjets officially became EF-84Es. The optimum contact and initial refuelling speed when flying with a B-29 was 205 m.p.h. (330km/h) IAS at 25,000ft (7,620m) but as fuel was received and the F-84 became heavier this was reduced to 190 m.p.h. (305km/h).

Staff of the USAF directed that "utmost secrecy" would be observed regarding the flight, and the request for official timing was withdrawn.

WESTWARD BOUND

The two F-84Es positioned to RAF Manston on September 16, 1950, but the transatlantic flight was delayed by adverse weather and serviceability problems. The first attempt was made on September 19, with Marks positioning the Lancaster over the Mull of Galloway after take-off from Tarrant Rushton, but the flight was frustrated by poor weather and difficulty finding the tanker in cloud. Assisted by Prestwick radar, contact was eventually made with the Lancaster (codenamed *Camelback 1*) at low level in heavy rain. However, Schilling reported a problem with the hose reel and that his probe valve was bent. As he could not take on fuel, the mission was

aborted and the F-84s returned to RAF Manston.

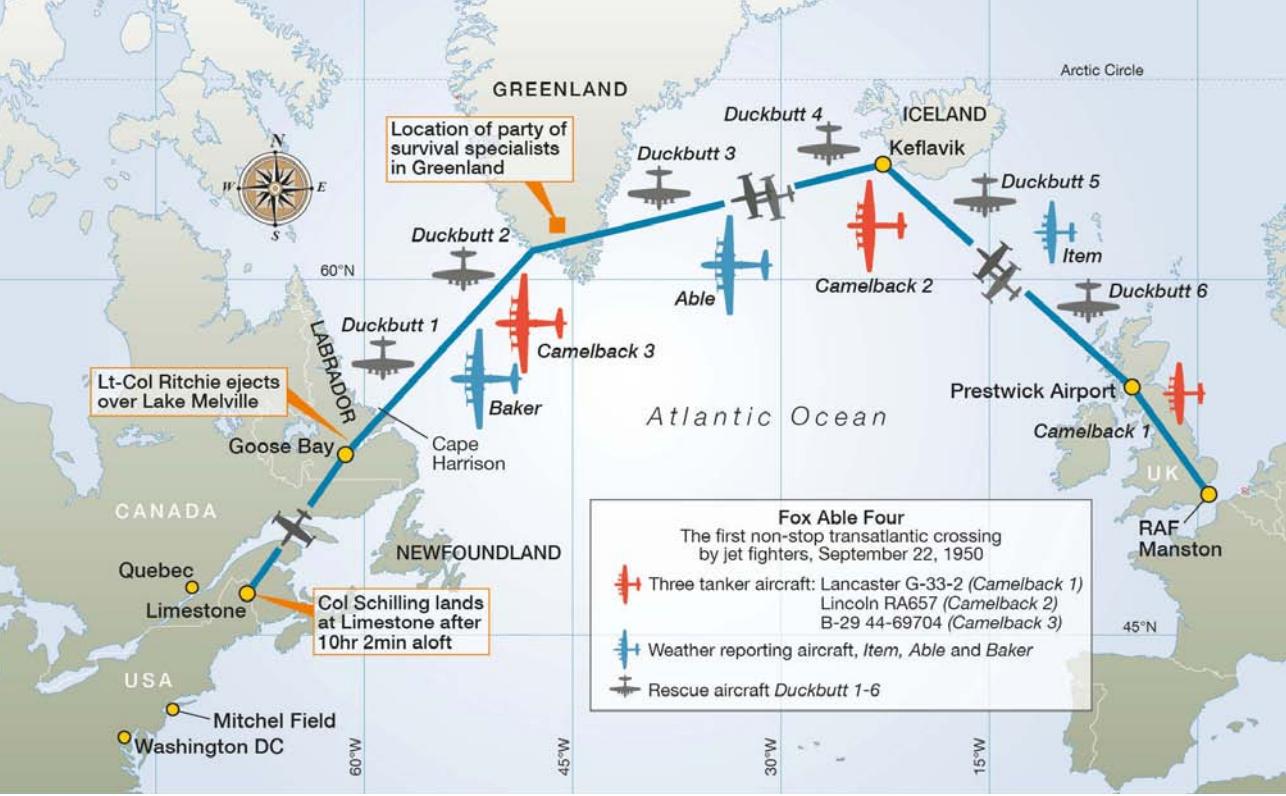
Meanwhile, Lincoln RA657 (*Camelback 2*) experienced an engine-fire warning light on take-off from Keflavik, but, as there were no visible signs of fire and the F-84Es had taken off, Hornidge decided to press on. On receiving the message that the fighters had returned to Manston the Lincoln returned to Keflavik, where its No 3 engine caught fire on landing owing to a broken exhaust stub. A replacement engine was quickly despatched on a Dakota from England and fitted at Keflavik by FRL personnel. Following ground runs and a short test flight, the aircraft was declared serviceable again in the late evening of the 21st.

During the delay, various faults were rectified and test flights made and a second attempt was arranged for Friday, September 22, despite Schilling having a heavy cold; he reportedly

Lancaster G-33-2, originally built as Mk III PB972, was one of two operated under B Conditions by FRL, the other being G-33-1, formerly ND648. The reason for the snub-nose is unclear, although it is quite likely that it may have been in order to improve forward visibility from the cockpit during trials which included close formation flying.

PHILIP JARRETT COLLECTION





MAP BY MAGGIE NELSON

had an inhaler clipped to his control column. Although the meteorological forecast indicated bad weather over Prestwick, there appeared to be a chance of a clear layer between 6,000 and 11,000ft (1,800–3,300m). The Lancaster took off from Manston, checking VHF contact with the F-84Es on the ground. By the time the Lancaster arrived over Prestwick, it was able to remain in clear weather above cloud at 10,000ft (3,000m) and this information was passed to the fighters.

The two F-84Es took off from Manston at 1303hr and radio contact was made with the tanker at a range of about 300 miles (500km). Shortly afterwards, the beacon in Ritchie's F-84, 49-2086, was switched on and was seen in the tanker at a range of 115 miles (185km). The navigator then took over and gave range and bearings until the fighters made visual contact eight miles (13km) out.

Refuelling commenced at 18,000ft (5,500m) at 165kt. Schilling made contact at the first attempt and fuel started flowing almost immediately. After about 4min he asked if he was full, but there were no indications in the tanker that this was so and the indicator light on his forward auxiliary tank had not extinguished. After another 2min in contact he broke away, saying he had enough fuel. Ritchie also made contact on his first attempt and after he had moved in, fuel flowed for 3½min and ceased, the pump-stall pressure in the tanker indicating that his tanks were full.

The tanker then flew to Tarrant Rushton, where a check showed that 750gal had been transferred to the two fighters, although it was not possible to determine how much each had taken.

Meanwhile, Camelback 2, Lincoln RA657, had taken off from Keflavik and established a patrol at 40–60 miles (65–100km) out on the west leg of the Reykjavik range at 12,000ft (3,700m). This differed from the pre-arranged location and height because of cloud conditions and, owing to supercharger problems, the aircraft was unable to maintain the necessary speed at 15,000ft (4,600m).

ON TO ICELAND

The fighters were heard on VHF radio 150 miles (240km) out from Keflavik, and were asked to switch on their Eureka transmitter beacons (the Lincoln carrying the *Rebecca* receiver), the message being relayed to them by the control tower at Keflavik. However, their beacons were not picked up by the Lincoln. When the fighters proceeded beyond Keflavik and the Lincoln was 75 miles (120km) out, FRL pilot Pat Hornidge and Ritchie, then in the lead because of radio issues in Schilling's aircraft, decided to return to the "cone of silence" directly overhead the Keflavik radio station. Despite his radio problems, Schilling reportedly contacted Hornidge, quipping in his American drawl: "Say, we're at 42,000ft near a hole in the cloud with water underneath — you anywhere near that?" The fighters let down over the cone and when they had the Lincoln in sight a course was set out from Keflavik.

Ritchie was asked to code his beacon when over Keflavik, after which a large blip immediately appeared on the Lincoln's radar screen and the position of the F-84Es was confirmed visually. The two fighters then flew in formation with the



CHARLES E. BROWN VIA AUTHOR

ABOVE One of the two EF-84Es refuels from Lincoln RA657 during trials. The Lincoln was delivered to FRL from the Metropolitan-Vickers factory at Trafford Park on September 5, 1949, under an MoS contract. Its first post-tanker modification air test was made in June 1950 and it was eventually returned to the RAF in July 1952.

Lincoln until 110 miles (180km) out from Keflavik, when Schilling came in for contact, which was achieved satisfactorily on the second attempt. Several contacts and breakaways followed, with alterations being made to the hose-drum torque setting. After 33gal of fuel had passed to Schilling, the pump-stall pressure gauge in the tanker indicated tanks full. However, Schilling reported that no fuel had passed to his forward auxiliary tank.

Ritchie then came in and made contact on the second attempt, and after 4min broke away after having been informed that his tanks were full. A total of 1,345gal had been passed to both aircraft. However, as Ritchie broke away, fuel was observed to be escaping from the probe in large quantities, indicating that the nozzle-valve was still open, although the fuel flow reduced quickly to a small stream.

ICELAND TO GREENLAND

The fighters left the Lincoln 185 miles (295km) west of Keflavik. About 5min later Schilling requested Camelback 2 to send a message to Keflavik requesting that the KB-29 tanker, Camelback 3, proceed to Bluie West One, the USAF airfield at Narsarsuaq on the southern tip of Greenland, with all speed to meet the fighters. This request was also made to USAF Air Rescue Service aircraft Duckbutt 4 and Duckbutt 3.

The Lincoln was no longer required, so it

returned to Keflavik. Asked if he wanted the Lincoln to stand by, Schilling said no but stated that they may have to abandon the flight at Bluie West One owing to shortage of fuel and strong headwinds. They decided to continue, however, as Ritchie was confident that he had sufficient fuel to make Goose Bay.

By this time the fighters were running 1½hr behind schedule and facing headwinds of up to 190kt. With the F-84Es cruising at 43,000ft (13,100m), the tanker presented a difficult target to find, particularly as Schilling's radar had developed a fault. With fuel running extremely low, the pair eventually found the KB-29 orbiting at 15,000ft (4,600m), Schilling finding that two of his tanks would not take any fuel. He filled the others and peeled away for Ritchie to try and connect. Three attempts were made to no avail; Ritchie would have no choice but to abandon his aircraft as far west as possible. The crew of the B-29 alerted the air rescue teams and gave Ritchie a bearing and distance to Cape Harrison, where it was estimated his fuel would finally run out.

Ritchie's lone Thunderjet climbed to 38,000ft (11,600m) and headed for the Cape, hoping that the altitude would provide plenty of gliding time. The F-84E's Allison J35 turbojet finally coughed its last shortly afterwards and he began a long glide westwards. By the time he had descended to 20,000ft (6,000m) he was in opaque mist, but after losing another 7,500ft (2,300m) found himself in



ABOVE "Nearly there . . ." The view of a KB-29 tanker from the cockpit of a B-29 receiver aircraft, in which the probe extended forward through the upper cockpit glazing panels above the copilot's head. Fox Able Four demonstrated the viability of air-to-air refuelling, which continues to be an essential part of military planning today.

the clear over Lake Melville, a massive saltwater tidal extension of Hamilton Inlet on the Labrador coast. At 3,000ft (1,000m) Ritchie "stepped out", the Thunderjet falling into the lake below. In a stroke of luck, Ritchie's parachute drifted into a patch of trees on the shore and he was rescued by a helicopter and flown to Goose Bay.

A LAST-MINUTE CHANGE OF PLAN

After Ritchie's departure, Schilling returned to the KB-29 tanker to have another try at filling his tanks, which was successful apart from the recurring issue with the forward auxiliary tank, which still would not accept any fuel.

Having returned to altitude Schilling was notified that a particularly unpleasant storm was brewing over New York, and that dense fog was a distinct possibility at Mitchel AFB before sunset. Accordingly, Schinz took the decision that a tired pilot trying to land a ground-controlled approach at Mitchel with minimal fuel was a risk too far, and he ordered Schilling to land at Limestone, Maine, 400 miles (640km) short of the destination.

Passing Goose Bay at 41,000ft (12,500m) Schilling began his descent into Limestone, receiving the welcome news that Ritchie was safe. On landing, Schilling discovered that he had covered a distance of 3,300 miles (5,300km) in 10hr 2min during the first non-stop flight across the Atlantic by a jet-powered aircraft.

In October 1950 Schilling was presented with

the Harmon International Aviation Trophy for his achievement by President Harry S. Truman, while Ritchie got another cluster to his Air Medal; Lt-Col Schinz received a Commendation.

Although FRL had completed Project *Outing*, the company suffered a considerable financial loss on the fixed-price contract owing to the additional work required for the F-84E modification. To recover these funds it was agreed that the USAF would pay \$800,000 for the licence rights to the probe-and-drogue system. Cobham later wrote that "although we sold our birthright to the USA, our finances on that deal were all square".

After returning to the USA, the *Outing* aircraft underwent further tests at the Wright Air Development Center in Ohio, and operational suitability tests were made at Eglin AFB in Florida. Republic modified another F-84E with a wing-mounted probe to replace Ritchie's aircraft and thus permit simultaneous refuelling with the three-point tanker. However, this modification was considered too complex for large-scale use and a "probed" tiptank was developed for the F-80 and F-84E.

The first combat use of flight refuelling was made on July 6, 1951, during operations in Korea by RF-80s refuelling from the *Outing* single-point KB-29 tanker. By 1952 formations of probe-equipped F-84Es were making deployments across the Atlantic and Pacific, refuelled by KB-29 hose-and-drogue tanker conversions.

The three Marineluchtvaartdienst Fairey Fireflies adorned with shark-mouth markings are readied for flight on the occasion of the type's retirement from Dutch Navy service at Borokoe, Biak, in December 1961.

PETER JONGBLOED VIA G.J. CASIUS



SMILE PLEASE . . . !

JUANITA FRANZI expands her series of articles on unusual airframes and their markings with an extended feature on a trio of Dutch naval Fairey Fireflies given some added bite for their retirement in 1961 . . .

T WAS A poignant moment for the personnel of *Vliegtuigsqron 7* (VSQ7) as they watched the three shark-mouthed Fairey Fireflies taxi out at the rough and dusty airstrip at Borokoe, Biak, in December 1961. The squadron had been operating the Firefly since its reactivation in mid-1955, playing a critical role in the defence of Netherlands New Guinea, the last remnant of the Dutch colonial empire in South-east Asia. This occasion marked the disbandment of VSQ7 and, with it, the end of the Firefly in Dutch service.

Following the devastation of the Second World War the Royal Netherlands Navy placed a high priority on rebuilding its air arm — the *Marineluchtvaartdienst* (MLD) — which became the first overseas operator to order the Firefly. Accordingly, 30 Mk Is arrived during the first half of 1946 and within a year were in action in the Netherlands East Indies (NEI) fighting the Indonesian independence movement. During 1947 an additional 40 Mk 4s and 14 Mk 5s were added to the MLD inventory. These were operated from Dutch aircraft carriers by VSQ1 and VSQ2 and by land-based training unit VSQ4.

Faced with stiff international political pressure and ongoing conflict the Netherlands government signed over the sovereignty of the NEI with effect from December 27, 1949. The MLD moved its NEI

base and equipment from NAS Morokrembangan at Sourabaya on Java to Biak, an island off the north coast of West New Guinea.

The Indonesians laid claim to West Papua, which, not having been included in the December 1949 agreement, remained a point of contention. In 1952 the Indonesians began a series of "infiltrations" into West Papua which eventually increased in frequency, causing unrest and tying up Dutch ground forces.

BOLSTERING BIAK

In July 1955 VSQ7 was reactivated at Biak in the air defence role using Firefly Mk 4 and 5. These were somewhat less than pristine, having been passed on from the carrier squadrons as the latter were re-equipped with more modern aircraft. Around ten Fireflies were kept on strength with VSQ7. A considerable number of spare airframes were kept in storage as replacement aircraft, while others were used as sources of spare parts.

Some Dutch naval personnel have fond memories of life at Biak, but for most MLD servicemen it was considered a tough assignment. The working conditions on Biak were rough, particularly for maintenance crews. Much of the service equipment was old and work was

Continued on page 40

FAIREY FIREFLY FR.4 / FR.5, VLIETTUIGSQUADRON 7, MARINELUCHTVAARDIDENST, BIAK, DECEMBER 1961

Firefly FR.4 (c/n FB229) "005": Delivered 18.4.47, s/n "11-33"; assigned VSQ4, also served with VSQ2; serial revised 1950 to "16-33". Delivered VSQ7, Biak; serial revised 1959 to "005"; wfu Biak 15.12.61

B

FR-4
005

KON. MARINE



300



Aircraft were finished in RAF/FAA Sky with Extra Dark Sea Grey upper surfaces

Firefly FR.4 (c/n FB253) "009": Delivered 2.10.47, s/n "11-57"; assigned VSQ1, also served with VSQ2; serial revised 1950 to "16-57". Delivered VSQ7, Biak; serial revised 1959 to "009"; wfu Biak 15.12.61

B

FR-4
009

KON. MARINE



300



National markings displayed on upper surface of port wing and underside of starboard wing

B

FR-5
015

KON. MARINE



300



Three-digit serial carried on upper starboard wing in white and underside of port wing in black

Firefly FR.5 (c/n FB397) "015": Delivered 14.3.49, s/n "11-79"; assigned VSQ2; serial revised 1950 to "16-79". Delivered VSQ7, Biak; serial revised 1959 to "015"; wfu Biak 15.12.61



PETER JONGBLOED VIA G.J. CASIUS

ABOVE Firefly FR.4 "010" in position as one of two gate guardians at the entrance to the Dutch Navy airfield at Borokoe on Biak. The other was a retired Consolidated Catalina previously on strength with VSQ321. Much of the apron area of Borokoe airfield consisted of bleached coral and was painfully bright under the equatorial sun.

Continued from page 38

undertaken in open-sided hangars. Daytime temperatures hovered around 29°C (84°F) throughout the year, average humidity was 83 per cent and there were frequent heavy downpours.

The age of the Fireflies and the humidity affected serviceability. In the first few years the crews were usually able to keep five of the unit's aircraft available for operations, the squadron flying an average of 150 hours a month. By 1959, hampered by a lack of spares, the average daily availability had reduced by one. Remarkably, the squadron was still maintaining an average of 130–140 flying hours a month.

It was also a challenging environment for the pilots. In addition to being at readiness for air defence duties, the Fireflies were used for patrol missions, target towing for ship gunners and ongoing ground-attack training. There was no air traffic radar or sophisticated navigation facilities and flying was restricted to daylight hours. Most of Biak and the Papuan mainland was blanketed in thick rainforest, sparsely populated and hardly suitable for emergency landings. The surrounding shark-infested ocean offered no safe alternative.

"ALL CORAL AND SMOOTH AS GLASS..."

The airfields on Biak had been built during the Second World War on a base of ancient coral and had operated as a main air depot for the Allies. A wartime pilot described the Borokoe runway as "all coral and smooth as glass, particularly when it was wet". A thin layer of asphalt was eventually laid over the surface, but by 1960 the airfield was rough and, even when swept, kicked up clouds of dust when aircraft departed.

When the United Nations General Assembly rejected Indonesia's claim to West Papua in

November 1957, tension rapidly escalated. The Dutch responded with the Fidelio Plan, under which Biak would be re-equipped with modern aircraft. Hawker Hunters soon arrived and by early 1961 had taken over the air defence role. When the Lockheed P2V-7 Neptunes of VSQ321 landed at Biak in October 1961 to begin reconnaissance operations, it signalled the end of the Firefly's MLD service career.

December 6, 1961, was set as the final day of VSQ7's Firefly operations. The Commandant of the MLD, Rear Admiral Den Hollander, flew into Biak for the occasion. The usual rules forbidding personal markings were set aside and bold shark-mouth artwork was applied to the noses of three aircraft: "005", "009" and "015". They were an impressive sight as they took off together and performed a display for the base, including a formation flypast with the Neptunes of VSQ321. The commander of VSQ7, Lt-Cdr Wermeskerken, accompanied by Rear Admiral Den Hollander, was given the honour of undertaking the last MLD Firefly flight. The squadron was formally disbanded on December 15, 1961.

As a final tribute to the type's years of service, MLD crews in full dress uniform pushed Firefly "010" across the apron to a prepared spot at the entrance of the base, where it became a gate guardian. The remaining Firefly airframes were placed around the airfield to serve as decoys.

Although there was significant international backing for West Papua to be developed into an independent country, the USA's support swung in Indonesia's favour and West Papua was signed over to Indonesian control in October 1962. After the Dutch forces withdrew from Biak, an Australian metal merchant scrapped the Firefly airframes.

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Air Cdre Bill Tyack CBE RAF (Retd)

28 April **Christchurch Branch Event**
British Aircraft Corporation 1960–1977
Stephen Skinner

29 April **Oxford Branch Lecture**
From Airships to Astrophysics: The Life and Work of Sir Barnes Wallis Peter Rix

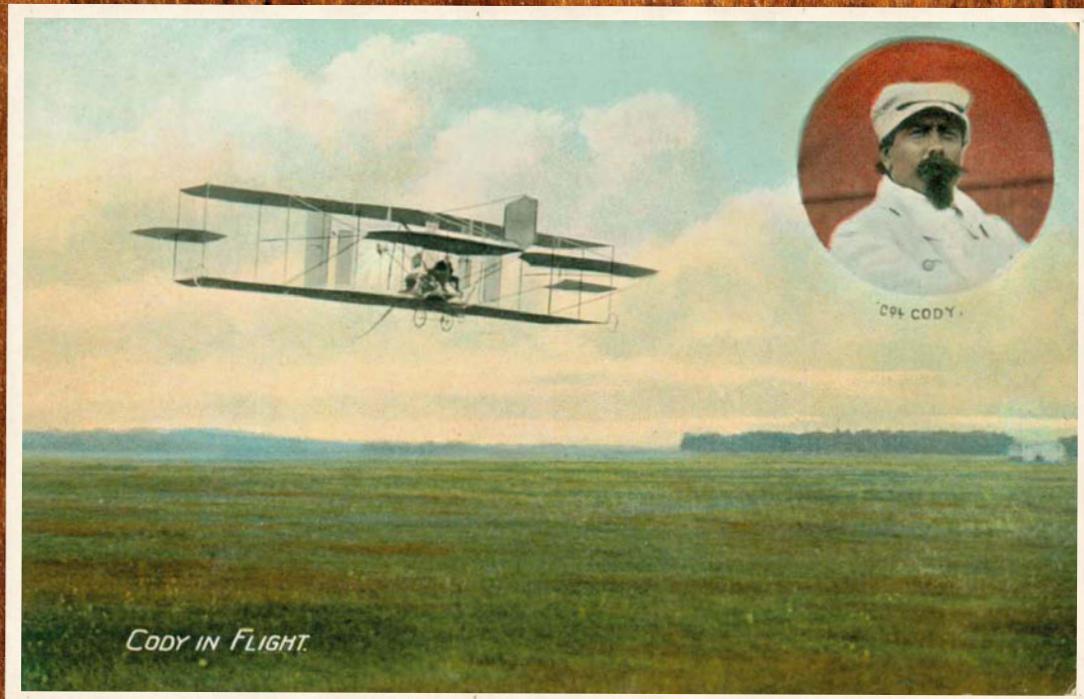
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POINTS OF DEPARTURE

Mr Cody & Mr Roe : Two Remarkable Men / Part Two





PHILIP JARRETT concludes his two-part comparison of the technical approaches, achievements and shortcomings of two of Britain's most significant aviation pioneers — Samuel Cody and Alliott Verdon Roe. We pick up the story in 1909, a few months after Cody's historic first powered, controlled flight in Britain, with Roe yet to make a successful flight

SAMUEL CODY (Cowdery) and Alliott Verdon Roe resumed their experiments with aircraft in 1909, the former with his much-modified original machine, and the latter with a completely new aircraft. Cody's machine was extensively rebuilt, being given new wings, extended booms to carry a new foreplane, fitted with differential ailerons, and rear rudder, and the top rudder was moved twice. His next significant flight occurred on January 20, 1909, when a structural failure resulted in a crash. At the end of the month the Imperial Defence Committee decided that the Balloon Factory's work on aeroplanes should cease, and Cody's engagement was terminated on March 31. He was allowed to keep the aeroplane and retain its engine on loan, but had to camp with it unprotected on Laffan's Plain until June 2, when a shed was erected. On June 18 Cody made his first circular flight, covering 1¼ miles (2km) and landing without damage, and on July 20 he made a flight of at least four miles (6·4km), including three circles. On August 12, having installed a 60/80 h.p. ENV and switched the position of pilot and engine, he accomplished a three-mile (4·8km) flight and made a figure eight, and two days later came his first passenger flights, when Colonel Capper and Lela Cody were taken up. On September 8 he was aloft for 1hr 6min, attaining 600ft (183m) and covering 40 miles (64km).

On October 9 Cody was forced to abandon an attempt on the London to Manchester prize flight owing to engine problems. Roe had written patriotically in August 1908 that "... if this is to be won by an Englishman there is no time to lose", so he was probably relieved by this news, although he was nowhere near winning it himself.

Cody's most noteworthy achievement at the Doncaster Aviation Meeting in October was his naturalisation as a British citizen on the 21st. In January his aeroplane was dismantled and stored, but on Capper's recommendation he was awarded British Aviator's Certificate No 9 on merit on June 7, 1910.

ROE BATTLES ON

While Cody had made great strides in 1909, Roe continued to struggle. Having abandoned his biplane, he drew his inspiration from France and



built a 20ft (6m)-span tractor triplane modelled on the Goupy triplane, but somewhat smaller. He had now patented another control system, using a system of levers and struts to twist the trailing edge of the middle plane and transmit the movement to the upper and lower planes, and this he incorporated in his new machine.

Roe was seeking a new test site, and recalled:

"As Cody was experimenting at Laffan's Plain, I thought it would be nice to keep him company, so applied to the War Office for permission to erect a shed near Cody's, but was informed that this request could not be acceded to.

"Here was a typical case of a foreigner receiving favourable treatment before an Englishman; although I liked dear old Cody, I felt a bit sore about it."

This disregarded the circumstances under which Cody had come to be on the site, and his earlier lengthy and close involvement with the military. In the end Roe's triplane was assembled

OPPOSITE PAGE A pair of contemporary tinted postcards showing Cody's much-modified British Army Aeroplane No 1 (top) and Roe at the controls of his triplane in September 1909 (bottom). ABOVE Samuel Cody models a crash helmet of his own design, known as the "Farnborough", which could be purchased at Gamages of Holborn.



LEFT Roe sits in his nearly complete triplane at Lea Marshes in early 1909. The machine has been temporarily fitted with the 6 h.p. JAP two-cylinder vee engine from Roe's original biplane, pending the delivery of something more powerful from Tottenham-based JAP.

BELOW Cody in flight at the Doncaster Aviation Meeting in October 1909. The aeroplane generally flew well after a 60/80 h.p. ENV engine had been fitted, enabling passengers to be carried, but its performance at Doncaster was poor.

in a railway arch alongside the River Lea on Leyton Marshes in Essex, and it was completed in late February/early March 1909. While he awaited its 9/10 h.p. JAP engine Roe installed the 6 h.p. JAP from his biplane and made preliminary taxiing trials in the early mornings or evenings.

Late in April 1909 Roe entered into partnership with his brother Humphrey, who would leave Alliott to design and build aeroplanes while he took responsibility for finance and organisation.

The 9 h.p. engine finally arrived late in May, and on June 5 Roe made hops of a few yards only. At the end of June he reported that he had made "short flights", "hardly more than jumps" of 50ft (15m) or so at a height of around 3ft (1m). It is worth remembering that Cody had flown his first circuit on June 18. Roe said: "Carrying 40lb per h.p. seems easy enough on paper but [is] rather different in practice".

This machine had variable-incidence wings as well as wing-warping and rudder, but the triple tailplane was fixed at this stage. His own description of his handling of the machine shows that he was suddenly applying maximum incidence after the tail had lifted. Thus the aircraft would "jump" into the air but then quickly descend owing to the sudden increase in drag,

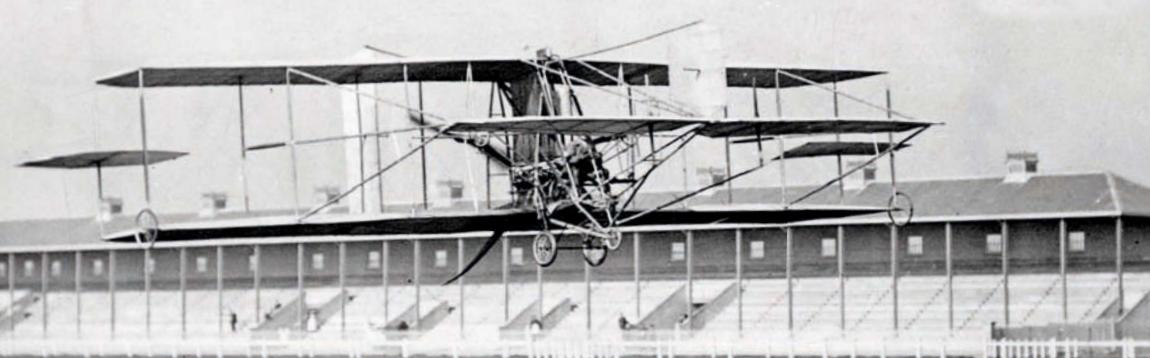
which was more than the engine could overcome.

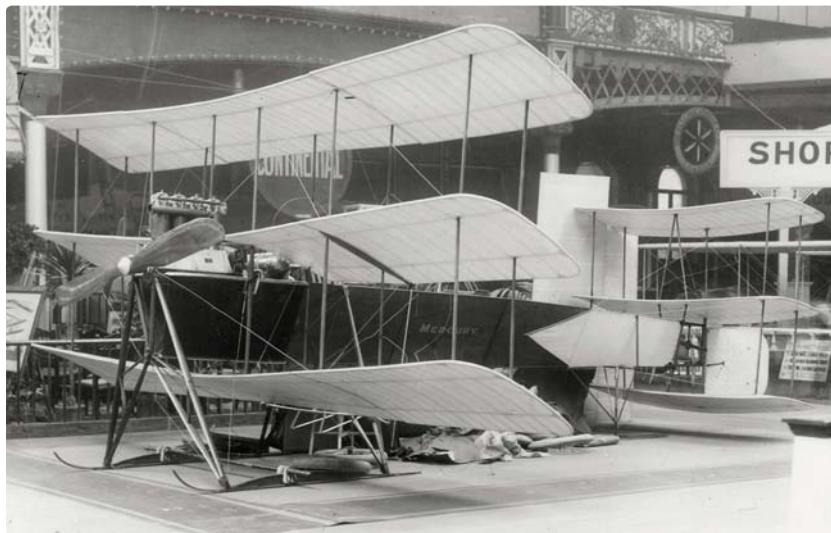
The usual ritual of crashes and modifications accompanied the trials, and on July 13 a 100ft (30m) hop was made. Roe had real problems in the limitations of his flying ground's area and its rough surface, and he suffered constant troubles with local authorities seeking to prevent him using the site.

IN BUSINESS

Then, on the morning of July 23, Roe made four straight-line flights, covering some 200–300yd (180–275m) on the latter three, and attaining heights of 4–10ft (1–3m). *The Motor* reported: "The machine was very stable in the air, and flew with every semblance of being capable of sustained flight". Short though they were, these were probably the first tentatively successful flights by a Briton in an all-British aeroplane. Roe's achievement was acclaimed in the press, but the lamentably slow progress of British aviation in general was brought sharply into focus only two days later, on July 25, when Louis Blériot crossed the Channel in his monoplane.

During the remainder of the year Roe made little real progress, and in October he had still flown only 300yd (275m). He took this triplane, plus an uncompleted second machine, to the Blackpool





LEFT The beginning of a long line — the first product of A.V. Roe & Co was the Mercury triplane, seen here being readied for display at the 1910 Olympia Aero Show in March. Its workmanship was much admired by the aeronautical press; the March 19, 1910, issue of Flight remarked that Roe was "ever getting nearer to his goal".

INSET BELOW Alliot Verdon Roe on the deck of the White Star liner Cymric on arrival at Boston, Massachusetts, on September 1, 1910.

Flying Carnival that month, but the event was a washout, and he made no noteworthy flights.

Resuming his trials with his new triplane at Wembley Park, Middlesex, on December 6 he made several steady flights of about half a mile, although he had still not managed a turn. On Christmas Eve, however, he suffered a major crash when he sideslipped into the ground.

At the start of 1910 A.V. Roe & Co was formed. The first product to emerge from the new factory in Manchester was the Mercury triplane, with a 35 h.p. Green engine and lever-operated wing warping, variable-incidence wings and tailplanes, and a rudder. Roe took this machine to Brooklands and resumed his trials, but progress was insignificant until April 17, when he crashed it. When it re-emerged ten days later it had undergone significant changes. The patented control system was at last done away with; the wings had ailerons, the tailplanes alone had variable incidence, and the rudder was enlarged. With the aeroplane thus modified, on June 1 Roe flew his first complete circles; just short of a year after Cody had accomplished the same feat.

With the appearance of the first Roe III triplane in mid-June Roe had two reasonably practical machines. In the Roe III on July 7 he made a 15min flight, and two days later he flew for 25min, "executing figure eights and sharp turns with the greatest ease". On July 20 he passed the tests for his Aviator's Certificate, No 18 being issued to him on the 26th.

Thereafter, the careers of the two pioneers diverged. Cody's new biplane, with a 60 h.p. Green engine, appeared on June 22, 1910 and he took it to the Bournemouth flying meeting in mid-July and to Lanark early in August, but

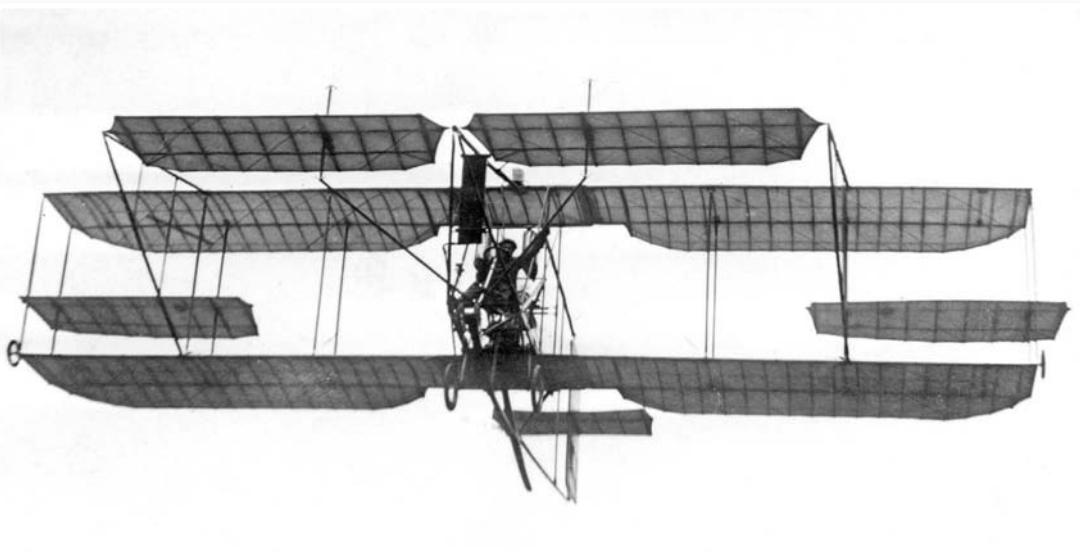
it was underpowered, and an attempt to install a second engine proved abortive. Once he had installed the ENV from his previous machine, however, it flew well, and he logged 113 miles (182km) over Laffan's Plain in the first week of September. He also made nine passenger flights that month. On the last day of the year Cody won the British Michelin Cup and £500 for the Briton who flew the greatest distance in an all-British aeroplane that year, setting new British records for distance and duration with a flight of 189.2 miles (305km) in 4hr 46min. It was reported that the aeroplane had flown 1,230 miles (1,980km) since October 10.

Cody entered his next biplane for the *Daily Mail's* £10,000 Circuit of Britain, which started at Brooklands on July 22, 1911. Despite several mishaps he took fourth place, his twin-tailed aircraft being the only British machine to complete the gruelling 1,010-mile (1,625km) course. On September 11 he won British Michelin Cup No 2 and £400 for the fastest time round a 125-mile (200km) cross-country course, being

the only competitor to complete the course. And then, on October 29, he again won British Michelin Cup No 1 and £500, covering 261½ miles (421km) in 5hr 15min over a seven-mile (11.25km) closed circuit; a new British endurance record. The aircraft had now flown some 2,500 miles (4,025km). In November he became the first British aviator to win the Royal Aero Club's new Superior Certificate.

In January 1912 Cody began flying his rebuilt Michelin Cup machine, now fitted with a 120 h.p. Austro-Daimler. On the 27th he became the first person in Britain to carry four passengers. By early May he had rebuilt his Circuit of Britain biplane and had nearly completed a

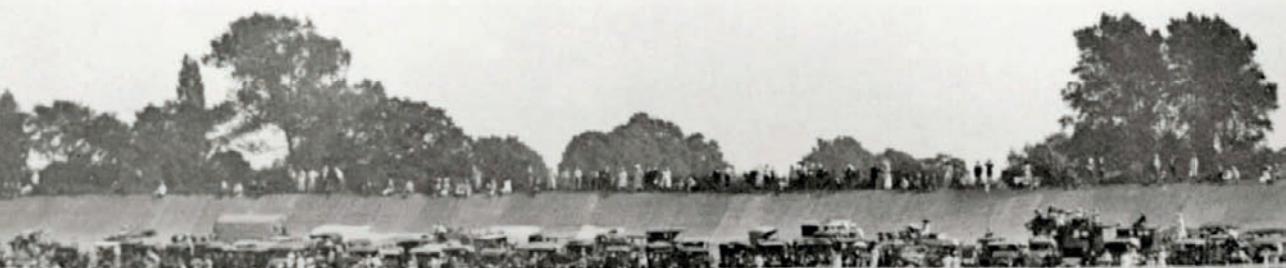




Twin rudders were a distinctive feature of Cody's Circuit of Britain Biplane, seen here taking off from Brooklands at the start of this gruelling event. It was the only British machine to complete the course.

ABOVE With the Anglo-French ENV engine from his previous aeroplane installed, Cody's Michelin Cup Biplane proved outstandingly successful, making many flights, carrying passengers and winning the British Michelin Cup plus £500 prize money.

LEFT The first Roe III triplane at Brooklands in the summer of 1910. The aircraft was powered by a 35 h.p. JAP engine and was fitted with large ailerons on its top wing only and a square-cut rectangular rudder. This machine underwent its first taxiing trials in mid-June 1910.



THE FIRST PRACTICAL AIRCRAFT: WRIGHT FLYER III/CODY BIPLANE/ROE MERCURY

	Wright Flyer III, 1905	Cody Michelin Cup Biplane, 1910	Roe Mercury triplane (ailers), 1910
Engine (rated h.p.)	Wright (30/40 h.p.)	ENV (60/80 h.p.)	Green (30/35 h.p.)
Nominal h.p.*	35 h.p.	65 h.p.	30 h.p.
Engine weight	170lb (77kg)	375lb (170kg)	158lb (72kg)
Engine lb/h.p.	4.85	5.77	5.26
Aircraft weight	800lb (363kg)	2,260lb (1,025kg)	550lb (250kg)
Power loading	22.8lb/h.p.	34.7lb/h.p.	18.3lb/h.p.
Wing area	510ft ² (47.4m ²)	790ft ² (73.4m ²)	250/280ft ² (23/26m ²)
Wing loading	1.56lb/ft ²	2.86lb/ft ²	2.2/1.96lb/ft ² †

*Early aero engines never produced their maximum rated horsepower, so allowance has been made for shortfall in performance. All subsequent figures are based on nominal h.p. It should also be borne in mind that the Cody and Roe propellers were very inefficient, whereas those of the Flyer III are known to have had an efficiency of 81.5 per cent, an astonishing figure for the time, and outstanding even today.

† On the Mercury the triple tail surfaces contributed a significant portion of the total lift. According to *Flight* of April 16, 1910, the mainplane area was 246ft² and the tailplane area was 74.25ft², giving a total lifting surface of 320.25ft². Thus the overall loading for all surfaces was given at 1.7lb/ft².

new monoplane. Both aircraft were entered for the forthcoming Military Aeroplane Trials, but unfortunately both were crashed shortly before the event. Undeterred, Cody built a new biplane incorporating usable components from the wrecks and flew it to Larkhill on Salisbury Plain for the trials on July 27.

THE MILITARY AEROPLANE TRIALS

By this time Cody was rather being left behind by advancing technology. His aeroplanes had evolved little since 1910, and he must have been one of very few constructors still making extensive use of bamboo in his primary structures. Although it offers the benefit of lightness compared with timber, bamboo — a grass — is notoriously unreliable. Two similar pieces can behave quite differently, and its tendency to crack and split longitudinally means that it is necessary to add binding between the nodes. All major aircraft manufacturers had abandoned it long since; Roe never used it after his first biplane of 1908.

Nonetheless, owing to the peculiarly specific demands of the trials, which rendered them "a pointless exercise" in the words of the late Jack Bruce, Cody's aeroplane emerged the winner, although it was actually totally unsuited to the military's needs. Cody won the £4,000 first prize plus the £1,000 first prize for aeroplanes manufactured wholly in the UK apart from their engines, and flown by British subjects. The War Office was thus virtually obliged to buy the winning aeroplane, and ordered one more example. In addition, early in August Cody was awarded £5,000 compensation in respect of the military adoption of his man-lifting kites. Suddenly Cody was wealthy, and he was also awarded the Royal Aero Club's gold medal.

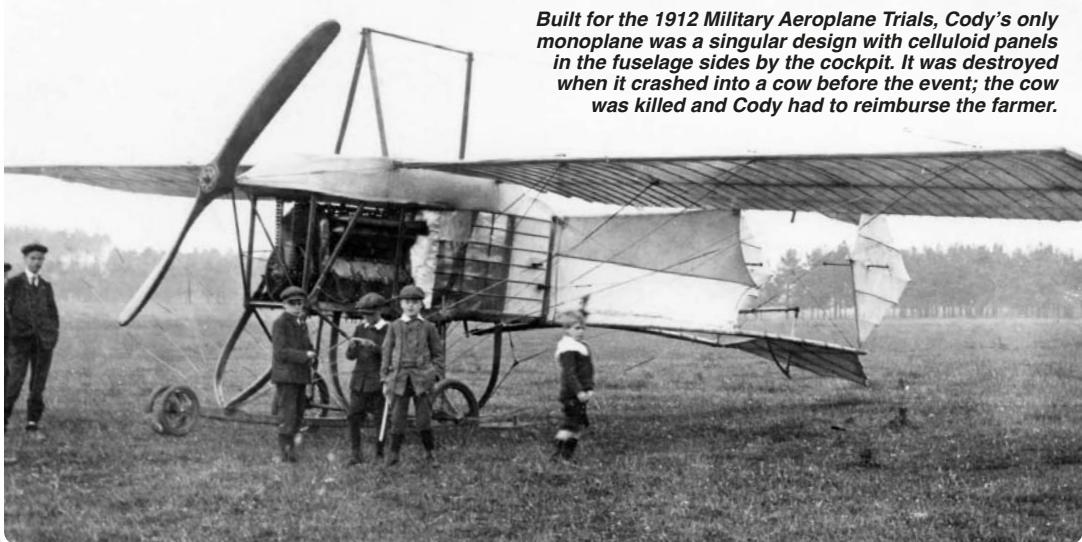
In October 1912, flying the military trials winner, Cody won the £600 British Empire Michelin

Cup for the fastest time over a 186-mile (300km) cross-country circuit. The aircraft was then delivered to the military, but failed in flight on April 28, 1913, killing its pilot. The second machine was taken on charge on February 20 but was wrecked on March 31 after flying only 2½hr with the Royal Flying Corps (RFC). Although it was repaired it never flew again, and it now resides in the Science Museum in London, the sole surviving original Cody aeroplane. Nearby hangs Roe's first triplane of 1909.

Cody had been slow to set up a company, but in May 1913 Cody & Sons Aerial Navigation Ltd was formed to promote and develop his inventions, and financial backing was sought. He was also scheming a design for a large machine in which to attempt to win the *Daily Mail's* £10,000 prize for a transatlantic flight, and building a seaplane to compete for the same newspaper's £5,000 first prize in a Circuit of Britain race.

The latter machine, by far the biggest built by Cody, apparently made its maiden flight, as a landplane, on July 14, 1913; and at the end of the month successful flotation tests were made on the Basingstoke Canal. Cody then refitted the wheel undercarriage and flew the machine back to Brooklands. On August 6 he flew it back to Laffan's Plain, and after two flights on the morning of the 7th he took Hampshire cricket captain W.H.B. Evans up for a flight at 1030hr. The machine broke up in the air and pitched out both occupants, who were killed instantly.

Cody, a civilian, was held in such esteem by the military and so loved by the British people that he was given a full military funeral. However, it is difficult to see how he would have fitted into the rapidly evolving aviation community had he survived. His aeroplanes were quaint and outmoded, and he lacked the means and ability to compete with the professional manufacturers



Built for the 1912 Military Aeroplane Trials, Cody's only monoplane was a singular design with celluloid panels in the fuselage sides by the cockpit. It was destroyed when it crashed into a cow before the event; the cow was killed and Cody had to reimburse the farmer.

BELOW Although it won the military trials, Cody's rapidly-built biplane was not what the military wanted, and only one more was ordered. This, the second example, was given the military serial 304 and delivered to the RFC in February 1913. Wrecked the following month, it was handed over to the Science Museum in November 1913.



BELOW Cody's large Waterplane shortly after completion in July 1913. It was initially tested as a landplane before undergoing flotation tests, but by the time of the fatal crash on August 7 it had been returned to landplane configuration. By this time Cody and his ideas were rapidly being overtaken by a new generation of designers.





LEFT A Gale and Polden postcard of the military funeral procession of Samuel Cody on its way to Aldershot Military Cemetery; the procession drew crowds of more than 100,000 who wished to pay their respects to the aviation pioneer.

BELOW The sole Roe IV triplane, the last of the early triplanes, was flown with both ailerons and wing-warping, the latter being seen here. It was the first of Roe's designs to have a non-lifting tail, used purely for pitch control.

that were now struggling into existence and producing far more businesslike machines with practical applications. Moreover, Cody's daredevil streak had manifested itself on several occasions as an apparent disregard for his own safety, when he took unnecessary risks by flying his aeroplanes when they were in a dangerous state. His contribution in the early years had been immense, and his eccentricity, charisma and true pioneering spirit made him a popular hero. But it is hard to visualise the part he might have played in the years ahead without some fresh design input by professional engineers and designers.

TRY, TRY AND TRY AGAIN

Roe, on the other hand, trod a very different path. His hopes of winning any substantial money prizes evaporated when J.T.C. Moore-Brabazon flew the first circular mile by a British aviator on a British-built machine on October 31, 1909, and

Frenchman Louis Paulhan, after a famous battle with Claude Grahame-White in April 1910, won the coveted £10,000 London—Manchester prize. At that time Roe was still struggling with his Mercury triplane and had yet to fly a mile, let alone from London to Manchester.

But Roe's great tenacity, added to the fact that he was now employing other capable professionals in his new-found company, at last bore fruit. Despite the disastrous loss of two aeroplanes in a fire on a railway truck en route to the 1910 Blackpool meeting, he managed to put up a creditable show at the event with a hastily assembled replacement triplane. He then took this aircraft to the Harvard-Boston meeting in the USA, but his performance was disappointing.

Back in England, however, the company produced the Roe IV triplane, in which the cumbersome triplane tail surfaces at last gave way to a monoplane tailplane. This was the first

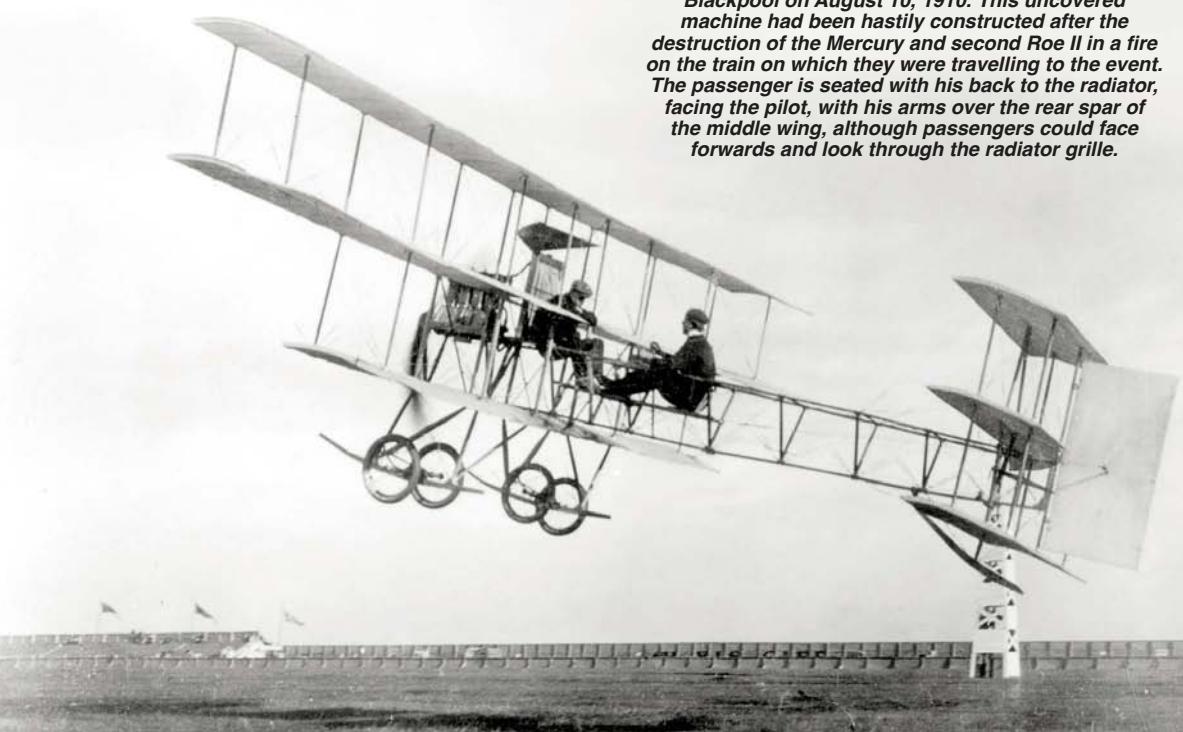




ABOVE The Avro Type D was a significant advance for Roe and heralded the advent of a great line of Avro biplanes. Pilot C. Howard Pixton is at the controls here. Note the extended undercarriage skids to prevent the aircraft nosing over.

LEFT Avro's brief experiments with totally enclosed aeroplanes in 1912 yielded the Type F monoplane, probably the world's first successful machine of this type.

Roe carrying a passenger in the third Roe III at Blackpool on August 10, 1910. This uncovered machine had been hastily constructed after the destruction of the Mercury and second Roe II in a fire on the train on which they were travelling to the event. The passenger is seated with his back to the radiator, facing the pilot, with his arms over the rear spar of the middle wing, although passengers could face forwards and look through the radiator grille.





ABOVE The Avro Type E, which Roe considered to be his first truly successful aircraft, everything before that being mere experiments, was developed into the Avro 500 with the fitting of a 50 h.p. Gnome seven-cylinder rotary engine. Seen here is the Avro 500 prototype, which demonstrated great promise on its first flight on May 8, 1912.

of Roe's designs to have the centre of gravity at the wings' centre of lift; thus the tailplane was non-lifting and purely used for controlling the aeroplane in pitch. For three years Roe's progress had been hampered by his dogged adherence to various fixations. At last, through trial and error (and doubtless with the helpful input of his new employees), he had learned the requirements for a stable aeroplane. This machine soon became the much-abused workhorse at the company's flying school at Brooklands, suffering many accidents at the hands of ham-fisted pupils and undergoing a variety of modifications during repair.

In April 1911 the Roe Type D biplane appeared, the progenitor of a great line of Avro biplanes. At least seven of these were built, but the market was small. *Flight* stated in early November 1911 that one of the things that stood to Roe's credit was "the construction of commercial aeroplanes for men of moderate means". "Aeroplaning is considered the sport of the few," the writer added, "but all along it has apparently been A.V. Roe's object to make it the pastime of the many,

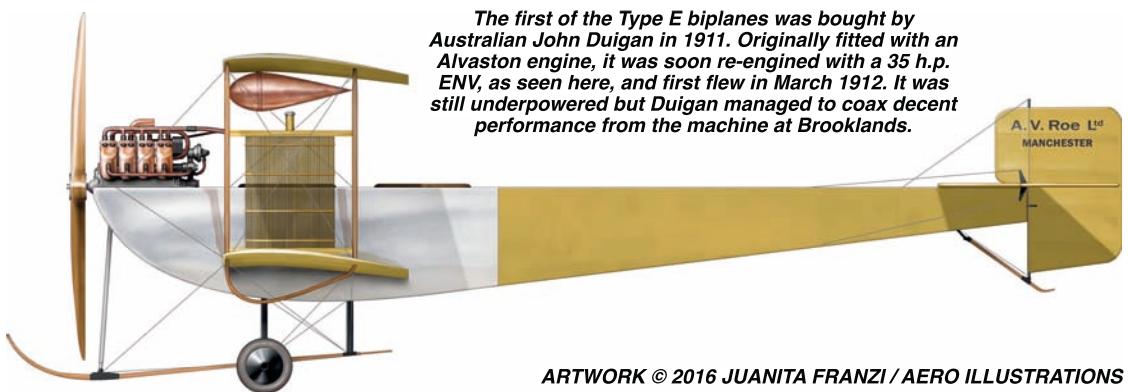
for it has been his ambition to build machines that are inexpensive in initial cost and reasonable in upkeep." Initially, of course, this economical approach had been dictated by Roe's low finances!

During October and November Avro advertised a promotional "special offer" of 12 Green-engined Type Ds at £400 each, but the private-flying market was far too small to sustain one company, let alone Britain's struggling infant aviation industry. Cody aeroplanes had been advertised since late 1909, but not one machine was sold to a private buyer.

The Type Ds were followed at the end of the year by the first Type E, a one-off two-seat biplane that was bought "off the factory floor" by Australian pioneer John Duigan. This machine proved to be too small and underpowered to carry two easily, and a larger version followed in March 1912.

THE BEGINNINGS OF A WORLD-BEATER
On May 1, 1912, the type F monoplane, the world's first successful totally enclosed aeroplane, flew. It had a fairly brief existence, but led to the Type

The first of the Type E biplanes was bought by Australian John Duigan in 1911. Originally fitted with an Alvaston engine, it was soon re-engined with a 35 h.p. ENV, as seen here, and first flew in March 1912. It was still underpowered but Duigan managed to coax decent performance from the machine at Brooklands.



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G, a larger, enclosed biplane. This was entered in the Military Trials along with the Type E, but the latter's intended ABC engine was not ready in time, so only the Type G took part. For various reasons it did not fare very well in the trials, although it earned a place in aviation history by becoming the first aeroplane to be successfully recovered from a spin.

Meanwhile, however, the company was at last achieving true success through sales to the military. The scaled-up Type E proved to have a good performance, and in February 1912 the War Office had ordered three with Gnome engines. More followed, including a single-seat variant, the Es, and it was on this aeroplane that the famous Avro comma-shaped rudder first appeared. When Avro introduced a numerical designation system the E, which A.V. Roe regarded as his first really successful aeroplane, became the Avro 500 and the single-seat Es became the Avro 502. Some 16 Gnome-engined Avro 500s were built in all.

Early in 1913 A.V. Roe made preliminary sketches for the 500's successor, with an 80 h.p. Gnome engine, staggered wings and a single "toothpick" skid between its mainwheels. By late July the prototype was under test at Brooklands. It proved to have an outstanding performance, and it was this machine, the Avro 504, that really made the company's name and fortune.

Thus the company founded by Alliott Verdon Roe after several years of virtually single-handed struggle blossomed into one of the world's great aircraft manufacturers. Its founder lived to see the remarkable Vulcan jet bomber take to the skies, dying in 1958 after a long and productive life.

In many respects Cody and Roe were chalk and cheese, Cody being regarded as a patriarch of British aviation even before his death, and Roe



becoming a revered figure somewhat later. But both were popular heroes in the pioneer era, and they shared several of the traits that made them the remarkable men they surely were: dogged determination, singlemindedness, perseverance and persistence in the face of adversity. Both were great pioneers in their respective ways, and both left their indelible marks in the annals of British aviation.



ABOVE RIGHT Captain of industry — Alliott Verdon Roe with a model of the Avro 607 flying-boat in the 1920s.

BETWEEN In 1913 the first Avro 504 appeared, the forebear of a classic design destined to become one of the world's greatest training aeroplanes. During the inter-war years many Britons had their first experiences of flying in one of the numerous 504s that toured the UK.

THIS SERIES WAS BASED ON A LECTURE PRESENTED TO THE ROYAL AERONAUTICAL SOCIETY ON APRIL 15, 2008





S.F. COWDERY (CODY) & A.V. ROE COMPARATIVE CHRONOLOGIES UP TO 1910

Samuel Cowdery (Cody)

Pre-1908

1893 Begins testing kites
1901 Patents man-lifting kite system
1900s Makes many kite ascents
1905 Tests manned biplane glider kite
1907–08 Experience with propellers and engines
Tests large Wright-type biplane kite
Late 1907 Begins construction of British Army Aeroplane No 1

1908

Late summer Completes BAA No 1
September 19 First trial of BAA No 1
September 21–29 Taxying trials and hops
September 29 Leaves ground for 75yd (not a flight)

Aircraft modified

Oct 13 Trials resumed
Oct 14 Number of hops and jumps (100yd at 10–12ft)
Oct 16 First powered, manned, sustained, controlled flight by heavier-than-air machine in the UK

1909

January Aircraft now rebuilt and modified
January 9 First series of trials completed; reconfigured
January 20 Trials resumed; second flight (1,200ft)
January 25 Trials resumed (aircraft reconfigured)
February 23 1,740ft flight; turn attempted
April Aircraft presented to Cody
May 13 3,600ft flight; half-circle completed
June 18 Distance of 1·25 miles; first circles
July 20 Distance of 4 miles (three circles)
August 12 80h.p. ENV engine fitted; figure of eight flown
August 14 First passenger-carrying flights
August 28 Cross-country; 8 miles
September 8 40 miles in 1hr 6min; 600ft reached

1910

June New biplane
Many successful flights with and without passengers until end of year

Alliot Verdon Roe

Pre-1908

Late 1890s/early 1900s Begins testing model gliders

1906 November Patents control system
1907 Begins construction of biplane

Late 1907 Makes towed tests of biplane

1908

June/July Towed tests with Antoinette and unsuccessful take-off attempts
Mid-July Aircraft dismantled and abandoned
August Visits Wilbur Wright in France

1909

January Patents second control system
↑
New machine (triplane) under construction
↓
April/May Completes triplane and begins trials.
Numerous short hops follow
Early June First tests with 9 h.p. engine

1910

June 1 First circles (Mercury with ailerons)
July First passenger-carrying flights



AIA LOGO ARTWORK: JUANITA FRANZI

An International Affair

The untold story of American International Airways, 1958–60

Propliner Editor **TONY MERTON JONES** investigates the brief life and rather unorthodox activities of one of the USA's most obscure airlines of the late 1950s, the original American International Airways — no relation to the post-1967 airline of the same name — which operated at the very fringes of legality with a fleet of increasingly decrepit C-54 Skymasters



PIERRE-ALAIN PETIT



ABOVE Urban L. Drew had flown with distinction as a fighter pilot during the Second World War, claiming a total of six aerial victories, before going on to become one of the three original partners that established American International Airways (AIA) in early 1958.

LEFT Douglas C-54A N75415 (c/n 10359) in AIA colours at San Francisco in February 1960, just as the airline was being wound up. It would be operating with Swiss airline Balair as HB-ILB by the end of the year.

ONE OF THE most notable features of the North American commercial airline scene during the 1950s was the number of charter companies founded using secondhand or military-surplus aircraft such as the Curtiss C-46 Commando or Douglas DC-4/C-54 Skymaster. The latter attracted the attention of many aspiring airline operators keen to cash in on lucrative military transport contracts and an impressive array of *ad hoc* passenger and freight charters. One such globetrotter was American International Airways, and, while its rather grandiose name implied an almost dominant influence on the air transport scene, the company was a minnow among the other established Skymaster operators on both Atlantic and Pacific routes. Its rather ragged fleet, coupled with a motley collection of aircrew, led to it fading from the airline scene just as quickly as it had arisen.

BEN, EARL AND RAY GO INTO BUSINESS

American International Airways (AIA) came into existence early in 1958 based at Burbank, California, with offices in nearby Sherman Oaks. Founded by three former Slick Airways pilots — Urban "Ben" Drew and his brother Earl, who became President and Vice-President respectively,

and Ray Grainger — AIA acquired a handful of Douglas Skymasters. Many of its early employees were drawn from the ranks of Slick, which had recently abandoned a network of domestic cargo schedules. This led to a number of layoffs among its flightcrews, and the three founders seized their opportunity to strike out on their own.

Born in Detroit in 1924, Ben Drew had served with distinction as a fighter pilot with the USAAF, both in Europe and the Pacific during the Second World War, and had later become instrumental in the formation of the Michigan Air National Guard. Credited with shooting down two Messerschmitt Me 262s while serving as a P-51 Mustang pilot with the 361st Fighter Group, he later flew Republic P-47 Thunderbolts in the Far East. His first foray into commercial airline operations had come in 1953 when he joined Slick Airways as a pilot, where he flew alongside his brother and Ray Grainger. Captain Willis "Bill" Kennedy was appointed AIA's chief pilot and Alex Merrick became the airline's chief navigator.

Although AIA is credited with operating as many as 11 Skymasters, many of these were leased from Slick, the Marjon Corporation and the 128th West Fourth Street Corporation; only about five were actually purchased by the airline.



PETER KEATING © A FLYING HISTORY LTD

ABOVE As with all small independent operators, thriftiness was essential for success and AIA simply adopted the feathered-wing logo of Slick Airways, from which it leased its first Skymasters, replaced Slick's titles with its own and repainted the fin white. Seen here is N88894, one of AIA's first two leased C-54Bs, in Slick colours at Newark.

Operations were launched by AIA in the spring of 1958 with two Slick C-54B Skymasters, N88894 (c/n 10496) and N88939 (c/n 18397), supplemented by two former Pan American World Airways C-54Bs, N88893 (c/n 10440) and N88937 (c/n 18337).

While the two former Pan American aircraft appear to have concentrated on freight charters originating in the USA, the two Slick aircraft soon appeared in Europe on charters, with N88894 arriving at Blackbushe on June 9, 1958, followed by N88939 on July 25. A base was established at Brussels-Melsbroek, from where the airline began operating a variety of both passenger and freight charters. The operation grew quickly and a retinue of pilots, navigators and flight engineers was recruited, mainly from the USA, while several local stewardesses were employed for service on

the passenger flights. The airline mainly engaged in long-haul work from Brussels and other European airports across the North Atlantic to the USA and deep into Asia, staging via the Middle East. It seems that the founders were keen to exploit the potential of the European air transport market, with charters in North America initially taking a back seat.

Early passenger work for the new carrier saw at least one of the Skymasters flying for German airline *Luftransportunternehmen* (LTU) from Düsseldorf, with N88894 conveying 70 passengers to Southend and back on Friday, August 1, 1958 on behalf of LTU, replacing the airline's only Skymaster, with Capt P.J. Durnan in command. Several other LTU assignments saw the Skymaster flying to various European resort airports during August and September, but this

The other of AIA's first two Skymasters, N88939, taxies in at Blackbushe with the outer engines stopped. Originally operated by Pan American as Clipper Hornet from June 1946, this aircraft went on to serve with Eastern during 1950–55, before joining Slick in July 1955. It was acquired by AIA at the end of August 1958.



THE AVIATION PHOTO COMPANY VIA AUTHOR



ABOVE A rare photograph of AIA Skymaster N88894 at Essendon Airport, Melbourne, in 1959, during one of the airline's few visits to Australia. This aircraft was originally built with the military serial 42-72391 and was delivered to the USAAF on December 18, 1944. In June 1946 it was acquired by Pan American to serve as Clipper Eureka.

work finished at the end of the summer, and the airline would need to look elsewhere for work.

During the winter of 1958–59 AIA began an expansion programme which would see further pilots joining the company, together with two former General Airways C-54As; N75415 (c/n 10359) and N95410 (c/n 10387). Among the pilots recruited by the airline at this time were captains Henry "Hank" Copes, Dick Hatfield, F. McDonald, H. Freeman, D. Keeler (who later became chief pilot), John P. Connell, C. Wheatley, Dick Johnson and Lucien "Lou" Pickett.

AMERICAN AMBITIONS

By the height of the summer of 1959 AIA could boast a fleet of six Skymasters and a staff of 14 captains, 22 first officers, 13 navigators, eight engineers, 13 stewardesses and four office staff, all based in Brussels. And while its personnel listing was impressive, the airline now began to spread its wings and become ever more ambitious in its flying programme.

Another former Slick Airways Skymaster joined the AIA fleet in March 1959 when C-54B N90420 (c/n 18366) was leased to the carrier, and it seems likely that other aircraft were also leased at this time, although their identities remain unknown.

Skymaster N88894 was seen as far away as Melbourne's Essendon Airport during the year on a rare visit to Australia by the young carrier. Flights between New York and Brussels via Gander, Keflavik, Prestwick and Shannon were becoming increasingly common — and, thanks to the logbook entries of navigator Burt Katlin and first officer Richard Dillon, we can enjoy an insight into the airline's routine operations. Burt joined AIA in February 1959 when he hitched a

lift on one of the airline's Skymasters from New York to Brussels, touching down in the Belgian capital on February 15.

It seems that crews remained with the same aircraft for weeks at a time as they tramped around Europe, North America and the Far East. For example, Katlin notes departing New York aboard Skymaster N88939 on the morning of June 17, 1959, en route to Gander, where he arrives after a flight of 8hr 46min. A similar-length sector then takes the aircraft on to Keflavik for a second refuelling stop, before it flies on to London and Paris (Orly), arriving on the afternoon of June 18. The following day the aircraft flies to Gatwick, from where it begins its next charter, staging via Athens, Bahrain and Bombay to Hong Kong, the latter sector being recorded as a marathon 14hr flight, arriving at Kai Tak on June 22. The 23rd sees the old Skymaster recording sectors from Hong Kong to Bangkok, Calcutta, Karachi and Aden, followed the next day by an Aden—Cairo—Nicosia flight.

Although the aircraft only briefly stopped off at most destinations, crewing was such that two captains would be carried, together with other surplus crew members in order that relief breaks could be taken on what would otherwise have been a particularly arduous tasking. Leaving Nicosia on June 25, Skymaster N88939 completed another freight flight to Bombay, Bangkok and Hong Kong before flying onwards to Singapore.

Here a consignment of Malayan jungle animals was collected and flown to Basle, Switzerland, via Bangkok, Bahrain and Athens. Arriving in Europe on July 1, the animals were then taken to a Swiss zoo. Other livestock flights saw several loads of rhesus monkeys being flown from the



ABOVE Skymaster N88939 is prepared for another flight, probably at Prestwick. Built at Santa Monica as C-54B 43-17197, the aircraft was very briefly put on the Brazilian civil register as PP-PCD before joining Pan American as N88939 in 1946. By the time AIA acquired its fleet of Skymasters, all had already been worked extremely hard.

Far East to both western Europe and the USA, where they were used in laboratory trials to help produce a vaccine for the treatment of polio. Up to 1,800 monkeys in small wooden cages would be carried on each flight, and, as the Skymasters were unpressurised, the aircraft would operate at 8,000ft (2,440m) or below with some of the rear windows removed in order to improve ventilation in the cabin. Nevertheless, the conditions were miserable for the monkeys, many of whom would die during the course of the flight, and would simply be thrown out of one of the open windows.

Skymaster N88939 touched down at its European base of Brussels on July 2, 1959, where a maintenance check was undertaken before the aircraft began its next adventure.

CHANGE OF LEADERSHIP

During the summer of 1959 changes took place in the management of the airline after it had come under the watchful eye of the authorities. The airline's three founders, the Drew brothers and Ray Grainger, all resigned from the board of AIA in June 1959 and formed a new company named Seven Seas Airlines, which would operate its Skymasters out of a European base at Amsterdam. They took with them several aircrew members, including Capt Hank Copes.

Meanwhile, management of AIA now passed to the airline's attorney, Earl D. Reese, who had little real hands-on experience of running an airline. Born in Arkansas in September 1920, Reese had served as a mortar gunner during the Second World War with the US Army's 395th

Infantry Regiment, and had limited experience of aeronautical affairs. The airline would be in for a rocky ride as it flew on with a fleet of increasingly weary Skymasters.

During 1959 the airline managed to join the list of approved airline contractors for the USAF's Military Air Transport Service (MATS). In addition to operating *ad hoc* flights in the Pacific region for the transport arm, AIA was awarded an important Pacific contract which would prove most lucrative for the carrier. This consisted of an inter-island contract linking Japan and various Pacific islands with Clark Air Force Base in Manila in the Philippines.

Previously operated by Transocean Skymasters, the contract was taken over during the summer of 1959 by AIA, which deployed its own Skymasters on the network. These also undertook regular flights from Travis AFB in California out across the Pacific to various destinations on behalf of MATS, while tramping missions saw the aircraft passing through airports such as Bangkok, Honolulu, Singapore and Hong Kong. It is believed, however, that AIA's approval for MATS work was limited to the Pacific region, and the airline undertook no MATS flights to Europe.

A British expat named John Townes was appointed Station Manager for AIA at Clark AFB in September 1959. Townes found Manila to be something of a culture shock, and to this day he well remembers riding on the wooden-bodied Philippine Rabbit Bus Lines bus from Manila to Angeles. Mounted on an American truck chassis, the body of the coach was crafted locally in wood and was a truly bewildering experience for any



TAH ARCHIVE

ABOVE A rare colour photograph of AIA Skymaster N88939, probably at Blackbushe, in a classic taxiing pose with outer engines stopped and the steerable nosewheel fully deflected to port. Although AIA passenger services did provide cabin staff, mainly locally-employed stewardesses, luxury was not a priority for the young airline.

visitor to the Philippines. Townes remained with AIA at Clark for four memorable months, and takes up the story:

"The Transocean station manager was still there when I arrived and helped me a lot. I hired all his local crew [20 Filipinos and one American mechanic], who performed the maintenance, refuelling and cleaning of the Skymasters. They were a good bunch of guys and I had a good working relationship with them. There were no catering facilities on base, so I had to go to the base PX [American equivalent of the NAAFI] each day and buy provisions for the flights.

"We operated one flight each day, which would arrive at around 0700hr and depart at about 1700hr. The crew slipped overnight on each trip. The flight originated at Tachikawa AFB about 30km [18 miles] west of downtown Tokyo, and then flew to Kadena AFB in Okinawa, which was an American possession at that time, but has

since been returned to Japan. The Skymaster then flew on to the civilian airport at Taipei, Taiwan, and finally to Clark AFB."

Townes found that the AIA Skymasters were not well cared for, although this was typical of many operators of the era. The aircraft were old, dirty and ill-equipped, with announcements to passengers being made by means of a hand-held loudspeaker. It was claimed that one of the aircraft had once suffered a wheels-up landing on an ice floe south of Greenland. The ice had allegedly been chopped away from around the aircraft, which was reported to have sustained damage to the starboard wing mainspar in the accident. One of the AIA aircraft certainly had a large metal patch, some 6ft (1.8m) x 2ft (0.6m), welded on to the upper wing surface. Townes admits that "it was something I looked at warily when flying on this particular aircraft, as you can imagine. It was also said that if any fire-warning

The well-travelled N88894 at Singapore during 1959. Like its sister Skymaster N88939, this aircraft was acquired by Eastern Air Lines in 1950 after service with Pan American, the pair joining Slick in July 1955. The first of the two to be acquired by AIA was N88939 in August 1958, with N88894 joining the AIA fleet in November the same year.

A. DAY VIA BARRIE DAY



"All aboard" — N88894 awaits its next cabinful of intrepid passengers at Prestwick in 1959. After the collapse of AIA this aircraft operated with Loftleidir and World Airways during 1960–61. On May 9, 1962, while operating with Slick, it suffered double engine failure in bad weather and belly-landed at Ackery, Texas, causing substantial damage.

PAUL HOWARD VIA AUTHOR



lights illuminated in the cockpit, the crew simply unscrewed the bulbs, although I cannot personally vouch for this story."

The USAF major in charge of contracts at Clark would come aboard and almost invariably write a bad report about the condition of an AIA aircraft. There was little Townes could do to rectify the problems as there was little chance of the Skymasters ever meeting the conditions of the contract. While the flightcrew, comprising two pilots, a navigator and a flight engineer, were generally Americans, the cabin crew were recruited in Japan and were a charming bunch.

Townes remembers that "the flightcrews were a pretty 'ragtag' bunch and I well remember on one occasion having to help a navigator up the front steps to the cockpit. He was so drunk we didn't dare let the MATS people see him, so we couldn't use the main rear stairs".

At the same time there were others who were utterly professional, highly experienced and who had flown for a number of far more illustrious carriers. Townes's fellow Brit Harry Huckins had

floated Bristol Blenheims during the Second World War, and he joined AIA as a navigator, having previously flown with Flying Tiger.

PLENTIFUL OPPORTUNITIES FOR TRAVEL

In addition to the routine flights between Tachikawa and Clark, AIA also undertook a number of *ad hoc* charters in the Pacific region, with many carrying consignments of rhesus monkeys. During his four-month tenure with the airline, John Townes made a couple of trips aboard the DC-4s. On December 10, 1959, he flew from Clark to Hong Kong aboard an empty AIA Skymaster, which then took on a load bound for San Francisco; and during January 1–2, 1960, he flew on a Skymaster on a monkey charter from Clark to Oakland, California, via Wake Island and Honolulu, Hawaii.

Unfortunately John neglected to note the registrations of the aircraft concerned, although it is known that Skymasters N75415 and N88893 were both active with AIA in the Pacific at the time, as they were reported passing through Kai

As part of AIA's expansion during the winter of 1958–59, more Skymasters were added to the fleet, including N75415, a somewhat weary C-54A that had previously operated with Eastern, Seaboard & Western, Meteor Air Transport and General Airways among others. It is seen here in the UK after the demise of AIA.

PETER KEATING © A FLYING HISTORY LTD



Skymaster N88939 at Blackbushe. By the beginning of 1960 AIA had attracted the attention of the authorities in America. The March 18, 1960 issue of Flight reported that "American International Airways has been refused renewal of its first year's operating certificate by the FAA. Violations are said to have covered 'just about everything in the book', including general level of aircraft maintenance, pilot qualification and flight-time limitations. This is the first such action to be taken by the FAA".



Tak, Hong Kong, on November 30 and December 25, 1959, respectively.

According to his logbook First Officer Richard Dillon boarded Skymaster N75415 as newly-employed AIA pilot at Brussels on the morning of August 11, 1959, accompanying Capt Wheatley in the cockpit for a transatlantic flight later that day. Staging via Shannon and Gander, the aircraft touched down at Idlewild the following morning. A day's rest in New York followed before Dillon boarded the same Skymaster during the early hours of August 14 for a flight to Goose Bay, Labrador. Here, a 24hr stop ensued before the aircraft flew on to Sondrestrom Air Force Base in Greenland, where it touched down at midday on August 15.

Dillon remained in Greenland for the next four days, which suggests that another crew took N75415 onwards to Europe. On the night of August 19 he joined Wheatley aboard the same aircraft for a flight from Sondrestrom to Gander and Charlotte, North Carolina. There followed a flight from Charlotte to La Guardia in New York on the evening of August 20, and on August 22 a ferry flight was made from La Guardia to Idlewild in anticipation of a transatlantic charter to Lajes airport in the Azores on August 24.

The Skymaster then flew from Lajes to Boston on the night of August 24, returned to Lajes the next day, and then flew from Lajes direct to Idlewild on August 29 — a flight recorded as taking some 13hr 52min. The month ended with the Skymaster flying an Idlewild—Boston—La Guardia service on August 29. Dillon had completed 107hr of flying aboard the Skymaster during August, with Wheatley accompanying him throughout.

September began in the company of Capt Wheatley, with him and Dillon departing

Idlewild aboard Skymaster N75415 on the evening of September 1 for La Guardia for a day stop. This was followed by a flight from La Guardia to Brussels via Gander and Shannon. It was a typical transatlantic mission: the Skymaster completed the Gander—Shannon sector in a flight time of 10hr 46min and arrived in Brussels on the evening of September 3.

For Dillon, a three-week break from flying followed before he joined Capt Lou Pickett on the flightdeck of Skymaster N75415 on September 23 for a service from Brussels to Tehran via Le Bourget and Athens. Following arrival in the Iranian capital on the morning of September 24, a two-day stopover followed before the aircraft flew via Athens and Le Bourget to Southend, where the Skymaster landed at 0650hr on September 27. The aircraft then flew back to its base at Brussels on the night of September 29, arriving during the early hours of September 30, thereby completing another month.

While Dillon had been busy aboard N75415, AIA's other Skymasters had also been plying the airways over the Atlantic and Pacific oceans. Most flights had been uneventful, but occasionally bad weather or a troublesome engine would cause a change to the itinerary. On September 20, 1959, Skymaster N88939 diverted to Shannon while en route across the North Atlantic from Gander to Prestwick, having suffered an oil leak in its No 1 Pratt & Whitney Twin Wasp engine. A ship's crew charter was undertaken early the following month when N75415 arrived at Liverpool (Speke) on October 5 to collect seamen bound for Athens, with the aircraft arriving during the early hours of the next day.

October 1959 would be Richard Dillon's final month of employment with AIA and all his



ABOVE Skymaster N30042 (c/n 18342) at Newcastle in April 1960. At the time the aircraft was being operated by the US Transport Corporation in association with Intercontinental Airways, to which most of the former AIA employees migrated when the latter collapsed in early 1960. It was later converted into ATL-98 Carvair G-AXAI.

flight time for the month would be accumulated aboard Skymaster N88894 under the command of Capt MacDonald. Leaving Brussels on October 7, the aircraft positioned to Schiphol Airport, Amsterdam, from where it departed for Keflavik and Gander very early on the morning of October 8. Refuelling at Gander took less than an hour and during the afternoon the aircraft took off on its final leg to Idlewild, where it arrived early the next morning. Once the passengers had disembarked, the Skymaster flew on to La Guardia for another swift turnaround.

Taking off from La Guardia at 0050hr on October 10, the Skymaster flew via Gander (where the aircraft remained for 36hr, possibly owing to a serviceability issue) and Shannon to Amsterdam, where it arrived at 1018hr on October 12.

SAFETY FEARS GROUND THE FLEET

Meanwhile, life in the Pacific was proving to be as challenging as ever for the AIA fleet, and the airline's reputation remained at a low ebb. American International had never achieved the same level of service as that previously provided by Transocean, and MATS had never been very comfortable with the operation. A number of safety-related violations had attracted the attention of the Federal Aviation Agency (FAA — Federal Aviation Administration from 1966), and, while the airline attempted to dodge many of the warnings issued by the authorities, it was clear that it could not continue in this manner.

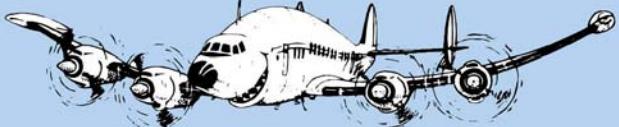
John Townes left his position at Clark AFB in January 1960, knowing that the airline was in trouble. Returning to California, he went to the company's office in Sherman Oaks to sort out his final pay cheque, only to become alarmed at the airline's inability to deduct tax from his earnings.

This would result in his tax deductions never being paid to the revenue authorities in the USA, thereby causing him great problems during his subsequent employment with Flying Tiger — but by then AIA had gone out of business.

The Skymasters flew on into January 1960, with N88939 passing through Paya Lebar Airport at Singapore on the 6th, and N88894 being noted flying a transatlantic charter from Gander to Shannon and Gatwick during January 8–9. Skymaster N75415 was reported at Bahrain on January 16, 1960, and it appears that operations continued until the end of the month, when the FAA withdrew the airline's operating licence on safety grounds. At the time AIA had been in financial difficulties and had failed to pay many of the crew members their final salaries. The company's European headquarters at Melsbroek was closed down as the airline's failure took hold.

Many of the crews had seen the end coming and had migrated to other rival carriers such as Seven Seas Airlines. A new airline named Intercontinental US Inc acquired plush new offices in Brussels and began Skymaster operations with N30042 and N30045 during the spring of 1960, and several AIA pilots, navigators and engineers joined this new carrier; meanwhile others went to Luxembourg and enrolled with Interocean Airways. American International had carved its own niche in the annals of commercial aviation, but it will be best remembered for its indifferent reputation and less-than-immaculate fleet of Douglas Skymasters.

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The Berlin Airlift Historical Foundation's magnificent airworthy Douglas C-54E, c/n 27370, alights on the runway at Monroe, North Carolina, in November 2014. Ugo Vicenzi takes an in-depth look at the Foundation, its work and its aircraft in the Propliner 2016 Annual — for details of how to order your copy see the panel above.

UGO VICENZI



THE PICK-UP ARTIST



THE PIPER SUPER CUB IN ISRAEL'S
OPERATION YARKON, JUNE 1955

By the summer of 1955 Israel's plans to occupy parts of the Sinai Peninsula to protect access to its southernmost port at Eilat were well advanced, but more hard info on a potential invasion route was needed. **SHLOMO ALONI** recounts how, in June of that year, six Israeli Air Force Piper Super Cubs flew deep into enemy territory to extract a team of scouts sent to survey local ground conditions

EGYPT AND ISRAEL signed an armistice agreement on February 24, 1949, effectively ending the conflict between the two nations that had raged from May 15, 1948, the day after David Ben-Gurion declared the new nation's establishment. Little more than two weeks after the signing of the armistice Israeli forces mounted Operation *Uvda*, to secure the southern Negev desert region, raising the Israeli flag at the abandoned police building at Umm Rashrash on March 10, 1949. Renaming the newly-acquired area Eilat, Israel planned to develop a city and port at this strategically important location on the Gulf of Aqaba.

THE BLOCKADE OF ISRAEL'S SOUTHERN GATEWAY

On January 6, 1950, Israeli Minister of Labour Golda Meir announced a plan to pave a road from the north to Eilat. Four days later, *Knesset* (Israeli parliament) member (MoK) Jacob Meridor, representing the opposition party *Herut* (forerunner of the modern *Likud*), forwarded two questions to Israeli Prime Minister Ben-Gurion:

- When will construction of the road to Eilat commence?
- How does the Israeli Government plan to counter the possibility of a blockade of the Straits of Tiran via the occupation of Tiran Island?

Ben-Gurion replied that the Government would state the timescale for the construction of the road to Eilat in due course, and that it was preferable not to discuss in public the matter raised in the second question. Clearly the Egyptian Government was paying attention, and acted accordingly. On January 30, 1950, the USA's Ambassador to Egypt reported the following to the American State Department:





ABOVE The personnel that successfully completed Operation Yarkon, including six Brigade 5 scouts (four standing from right and two crouching from right), six 100 Squadron pilots (three crouching from left and three sitting in front) and an Israeli Navy serviceman (in white t-shirt) at Eilat after completion of the mission on June 12, 1955. BELOW The identity of the Super Cub fitted with a four-wheeled main undercarriage used for Yarkon is not known for certain, although it is likely it was serial number "0433", which was the only aircraft assigned to the mission equipped with a radio transceiver.

ALL IMAGES VIA AUTHOR





ABOVE The first of the Israeli Air Force Piper J3/L-4 Cubs, "0401", is seen here in the background at Ramla the day after Enoch Keret flew it on the preliminary reconnaissance mission over the Sinai Peninsula on May 28, 1955. The Israelis received 20 of these early-model Cubs from August 1948, with PA-18 Super Cubs arriving from 1955.

"Because of certain intentions . . . manifested by Israeli authorities recently toward Tiran and Sanafir Islands in the Red Sea at the entrance to the Gulf of Aqaba, the Egyptian Government, in perfect accord with the Saudi Arabian Government, has occupied the islands."

Initially, the Egyptian occupation of Tiran Island and the corresponding blockade of the Straits of Tiran did not concern Israel unduly because there was simply nothing to block. However, work on establishing Eilat as an urban settlement began in 1952 and construction of the first pier at Eilat Port followed in 1955. It was at this point that the Israeli Government's attention turned towards diplomatic and military options to lift what could become an Egyptian blockade.

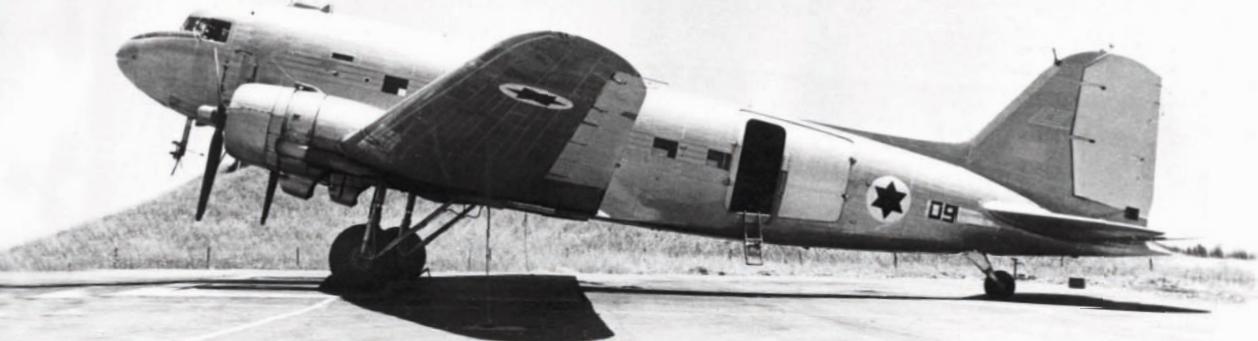
Accordingly, the Israeli Government ordered the Israel Defense Forces (IDF) to plan for an offensive, assigning Brigade 5 to the task.

Operation *Omer*, as it was designated, would comprise two central objectives:

- Israeli Air Force (IAF) airlifters would drop two Brigade 5 battalions to occupy the southern tip of the Sinai Peninsula;
- Brigade 5's main force would advance from Eilat to the southern tip of Sinai along the west coast of the Gulf of Aqaba.

The biggest challenge regarding the successful execution of the plan was the lack of a proper continuous road from Eilat to the southern tip of Sinai, a straight-line distance of more than 140 miles (230km). Accordingly, the IAF despatched reconnaissance aircraft to photograph the area. Analysis of the photographs revealed that the route was generally passable. However, there was one sector, from the oasis at Ain Furtage south to the coastal village of Dahab, a distance of some 35 miles (56km), where the quality of

Douglas C-47 "1409" of 103 Squadron was used throughout Operation Yarkon for transport duties. From November 1948 all IAF aircraft types were given a four-digit serial, the first two numbers representing the aircraft type — "04" for the Piper Cub/Super Cub, "14" for the C-47 etc — and the second pair representing the individual airframe.





ABOVE Six of the seven 100 Squadron pilots allocated to Yarkon gather for a photograph before departure from Ramla to Eilat on June 10, 1955. From left to right: Albert Atar; Moses Aran; Solomon Brosh; Eliezer Levinson; Enoch Keret and spare pilot Paltiel Sirokin. Note the Thompson sub-machine-guns provided for self-defence.

cross-country mobility was rather more difficult to ascertain. It was therefore decided to despatch a patrol to survey the sector from Dahab to Ain Furtage. The mission would be designated Operation Yarkon, named after the river in central Israel.

PREPARATIONS BEGIN

Six Brigade 5 soldiers volunteered to undertake the survey walk: Battalion 51 Commander Asher Levi; his Deputy Commander Emanuel Shaked; Battalion 51 Signals Officer Igal Talmi; Aaron Levran, a company commander from Battalion 52; Yoram Lipski, a platoon commander from Battalion 52 and Dov Simchoni, a scout from Battalion 51 who was the only enlisted person (rather than an officer) in the team.

The Israeli Navy (INF) was tasked with transporting the team from Eilat to Dahab Bay. The walk to Ain Furtage was to take three nights, with the team hiding during the hot daylight hours when the temperature was expected to reach 50°C (122°F). The IAF was to communicate with the team at night and provide supplies, especially water. Evacuation of the team was to be accomplished by the IAF, via a pre-planned landing site, either in a single Douglas C-47 transport or in six Piper Super Cubs, or alternatively by the INF from the Sinai coastline.

The team of scouts began training, undertaking three rehearsal walks, Simchoni flying along the actual route on May 28, 1955, with the IAF's 100 Squadron Operations Officer Enoch Keret in Piper Cub serial "0401", the oldest Cub in IAF

service, having been on strength since September 1948. Keret recalled:

"We flew along the [Sinai] coastline to Dahab, then [after turning inland] started to comb the sector looking for suitable landing spots. This was the objective of the reconnaissance mission, to find potential landing spots.

"The aircraft was troublesome; old, with only enough fuel for 3½hr endurance and prone to overheating. In that high temperature we had to fly at 1,000ft [300m], almost inside the gorge. The aircraft was overheating but somehow we managed to climb. [Flying] downwind inside a gorge can prevent an aircraft from climbing. I didn't want to risk getting into such a position so we flew almost at the top [of the ridges on both sides of the gorge], thus enabling the scout to observe, with binoculars, what was going on inside the gorge."

Dov Simchoni, Keret's passenger, added:

"Keret's main interest was the landing spots. I was interested in the route. All along the route I looked for tracks of vehicles. I was concerned about being seen by inhabitants, but we saw none until Ain Furtage. There we observed herds of animals and groups of people, and for this reason I later suggested at every opportunity that we should not walk beyond the drainage divide line in the direction of Ain Furtage.

"We flew over Ain Furtage and along the gorge to the coastline, to the planned egress point, at which we descended to low altitude. Over some of the other places I did not have the nerve to ask [the pilot] to descend."

Total flying time for the mission was 6hr 30min, possibly including a refuelling stop at Beersheba, where 100 Squadron's C Flight — commanded by Keret until just before Operation Yarkon — was based, or at Eilat, as the mission probably departed from Ramla, where 100 Squadron was based.

MOSQUITO TOP COVER

During the evening of June 8, 1955, 103 Squadron pilot Joseph Ofer, along with copilot Uri Yaffe, navigator Ran Shahaf and radio operator Arie Alon, flew the team of scouts to Eilat in C-47 serial "1409", which departed Tel Nof at 2030hr and arrived at 2200hr. The designated H-Hour for landing on the Sinai coast was 2130hr–2230hr on June 9, so the team departed the port at Eilat at 1030hr to sail south in a small INF boat. Acting as top cover, 109 Squadron de Havilland Mosquitoes observed the INF boat from a distance. Flying Mosquito serial "2172", Amity Levin (pictured **RIGHT** at Hatzor in April 1955), accompanied by navigator Amity Lask, later recalled:

"Once or twice a week, an Egyptian ship delivered supplies to the Egyptian border post [near Eilat]. My mission [on June 9] was to spot the ship sailing north and report to our [INF] boat [sailing south with the scouts] when the Egyptian ship was getting closer, so that they would be able to avoid a confrontation. I was also tasked with flying a reconnaissance mission down to Sharm el-Sheikh, including Tiran Island and Sanafir Island, and to write down the names of every observed ship. In order to do so I had to fly lower than deck level. This we did alongside the Egyptian supply ship, to make sure it was the ship we were looking for. The Egyptian troops onboard waved at us. We were flying so



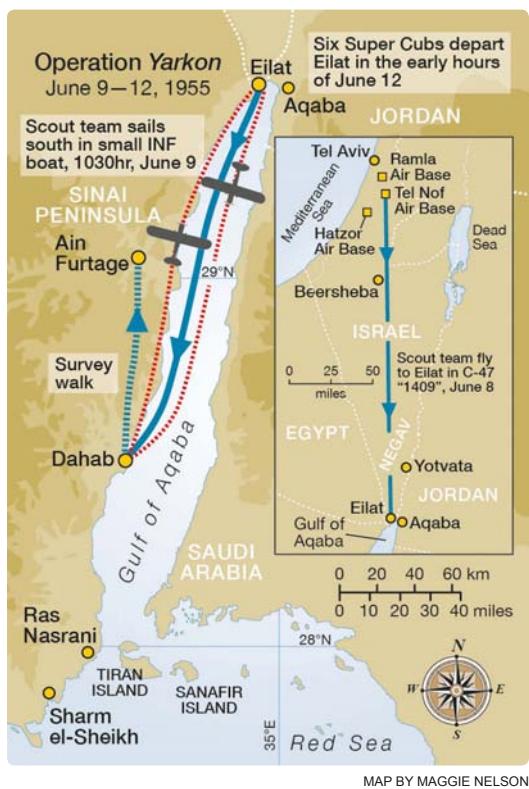
low it all looked very exotic, [until] we turned over Ras Nasrani, where they opened fire on us.

"After landing at Hatzor I was told that the Egyptians reported the exact number of rounds they fired at a silver aircraft with red spinners. Our Mosquito was indeed silver with red spinners but apparently the Egyptians did not identify it as a Mosquito."

The scout team's voyage south lasted longer than planned. Dahab Bay was not pinpointed until 0130hr and landing was not accomplished until 0205hr, thus giving the team less time

Israeli aircrew make their way towards their de Havilland Mosquitoes at Hatzor in April 1955, two months before FB.VI "2172", the first in the line-up here, was flown by Amity Levin during his top-cover mission in support of Operation Yarkon on June 9, 1955.





MAP BY MAGGIE NELSON

in which to reach its first daylight hideout than planned. Regardless of exhaustion and seasickness the scouts set out at a brisk pace, covering an estimated 4½ miles (7km) in the first hour, during which the C-47 — same aircraft, same crew — appeared overhead to communicate, but not to drop supplies. The team continued walking to the first hideout past sunrise, arriving at 0540hr on June 10. Resting during the day, the team set off again at 1730hr.

The C-47 appeared at 1945hr to establish contact and returned again at 0230hr the following morning to drop supplies. The team requested that only water be dropped, as, owing to the excessive heat and the effects of the sea voyage, they had eaten very little of their initial rations. The drop was far from ideal. The parachutes of the first two packages failed to open and the water cans burst on impact with the desert sand. The third and fourth packages landed some 1,000yd (900m) to the south of the team. Retrieving the water cans took a great deal of time and effort, and the team advanced no further that night.

The C-47 — the same airframe and crew were used throughout the operation — arrived overhead at 1945hr on June 11. Team commander Asher Levi reported to Ofer in the C-47 that he expected the team to reach a potential landing strip sometime between 0100hr and 0200hr the following morning. The walk was resumed at 2130hr, although moonrise was not expected

until 2345hr, making initial progress slow and hazardous. At 0115hr the scouts reached the landing strip, where they waited for the C-47. The transport arrived at 0230hr with the news that the team would be evacuated from the same field in light aircraft at dawn on June 12.

OSPREYS INTO ACTION

Seven Piper PA-18 Super Cubs (given the name *Cheevayee* — Hebrew for Osprey — in IAF service), departed Ramla for Eilat on June 10. In sharp contrast to the May 28 reconnaissance mission made by Keret and Simchoni in the IAF's oldest Cub, the air arm's newest Super Cubs were assigned to participate in Operation Yarkon. At Eilat, the pilots were put at readiness to evacuate the six scouts in six of the Super Cubs (the seventh was brought along as a spare). One of the pilots, Moses Aran, recalled:

"Suddenly [there were] seven aircraft at Eilat. In order to avoid undue attention we spent the night at Eilat, but early in the morning we departed for Yotvata. I flew from Eilat to Yotvata with a mechanic aboard, flying low — *very* low — until BANG! I hit a stone wall.

"Instinctively I pushed the throttle forward and pulled up. Apparently my instincts were really fast, so, luckily, we did not roll over. I looked at the wheels and saw that the undercarriage was bent backwards.

"With everybody else down at Yotvata, I was the last to arrive and came in low so that they could see what had happened to my aircraft, but they all figured that my intention was to buzz them and they ignored me. In the Super Cub there was a box for the delivery of messages so I wrote a message and dropped the box. Still nothing. They gave me the finger, meaning that they would not duck because they still assumed that my intention was to buzz them! I came in low, throttled back and shouted that something had happened to the aircraft and that I would fly to Ramla. At last they understood me."

"On our way to Ramla the mechanic and I agreed that if I could manage to land at Ramla without the undercarriage collapsing — and thus drawing attention to us — he would replace it. At 5,000ft [1,500m] over Ramla I switched off the engine and positioned the propeller horizontally, so that should the undercarriage collapse, the propeller would not be damaged. I then performed my best emergency landing ever — and the undercarriage did not collapse. I muttered 'I was the last to land, I entered the slipstream of preceding aircraft, hit the ground hard and this is how it happened'. Only when we convened to mark the 25th anniversary of Operation Yarkon did I reveal for the first time how I really damaged the aircraft."

"It was a hot day, terrible heat. I took a shower, the undercarriage was replaced and a couple of hours later we returned to Yotvata. The spare pilot never forgave me for returning!"

THE EVACUATION

In preparation for the evacuation, the team of scouts marked the field and cleared large stones. Team leader Asher Levi recalled:

"We figured that the field was suitable, but the wind was blowing from the direction of a nearby mountain so they would have to land and take off towards the mountain. I am not sure that they would have approved this field, but once they arrived and the field was marked they landed. First to land was the aircraft with the four wheels. It was 'Lizi' [Eliezer Levinson]."

The six Super Cubs had returned to Eilat, from which two three-aircraft formations departed in the early hours of June 12; the first was led by Eliezer Levinson, with wingmen Isaac Zusman and Albert Atar, and the second group was led by Enoch Keret in Super Cub "40" with Moses Aran in "39" and Solomon Brosh as his wingmen. The pilots followed the tracks of the scout team's sea and land voyage. They flew from Eilat over the Gulf of Aqaba down to Dahab Bay, where they crossed the coast and flew along the gorge through which Keret had flown a fortnight previously, and along the bottom of which the scouts had walked. Enoch Keret remembered:

"According to the briefing only I was to have a map and the others were to follow in trail, with each following the white tail light of the preceding aircraft. I violated this order and gave each pilot a map, on which was marked the landing spot. The tail light of the fifth aircraft went out for some reason and [the trailing pilot] homed on a star instead and got lost. Five of the aircraft had arrived at the landing strip and I had already decided to take off with two scouts when suddenly, out of nowhere, the sixth aircraft arrived! As morning broke he realised that he was not following anyone — fortunately he had a map and he knew where to fly to . . ."

The IDF planners had expected all six aircraft to land and then take off together, but IAF decision-makers thought otherwise and stipulated that three aircraft would land and take off, the other three following shortly thereafter. First to land was, as Asher Levi recalled, a Super Cub fitted with a four-wheel undercarriage, followed by two standard aircraft. The first three scouts to take off were Shaked, Lipski and Simchoni. Keret recalled:

"[The four-wheel undercarriage] was specifically fitted for soft sand and tillage soil. It used to jump and stop [on landing] but was

difficult to take off. The field was inclined a little bit. We landed uphill and took off downhill. Down below there was a campfire."

Apparently there were people nearby, possibly an Egyptian camel patrol that was allegedly tracking the scouts. Yoram Lipski recalled a less-than-perfect departure:

"The aircraft with the four wheels was the first to take off, with me in it. We started the take-off run, and I don't know a lot about flying, but I could see that as we passed over the end of the strip panels the aircraft was still not lifting. The pilot cursed and said 'I can't climb!' We entered a ditch, the aircraft jumped and then lifted."

For the following Super Cubs taking off was easier and the last to depart was Enoch Keret

PIPER PA-18 SUPER CUB DATA

Powerplant 1 x horizontally-opposed four-cylinder air-cooled 150 h.p. Lycoming O-320 piston engine driving a two-bladed wooden or metal propeller

Dimensions

Span	35ft 2½in	(10·72m)
Length	22ft 6in	(6·86m)
Height	6ft 7in	(2m)
Wing area	178·5ft ²	(16·58m ²)
Wing loading	10lb/ft ²	(48·8kg/m ²)
Power loading	11·6lb/h.p.	(5·26kg/h.p.)

Weights

Empty	930lb	(422kg)
Loaded	1,750lb	(794kg)

Performance

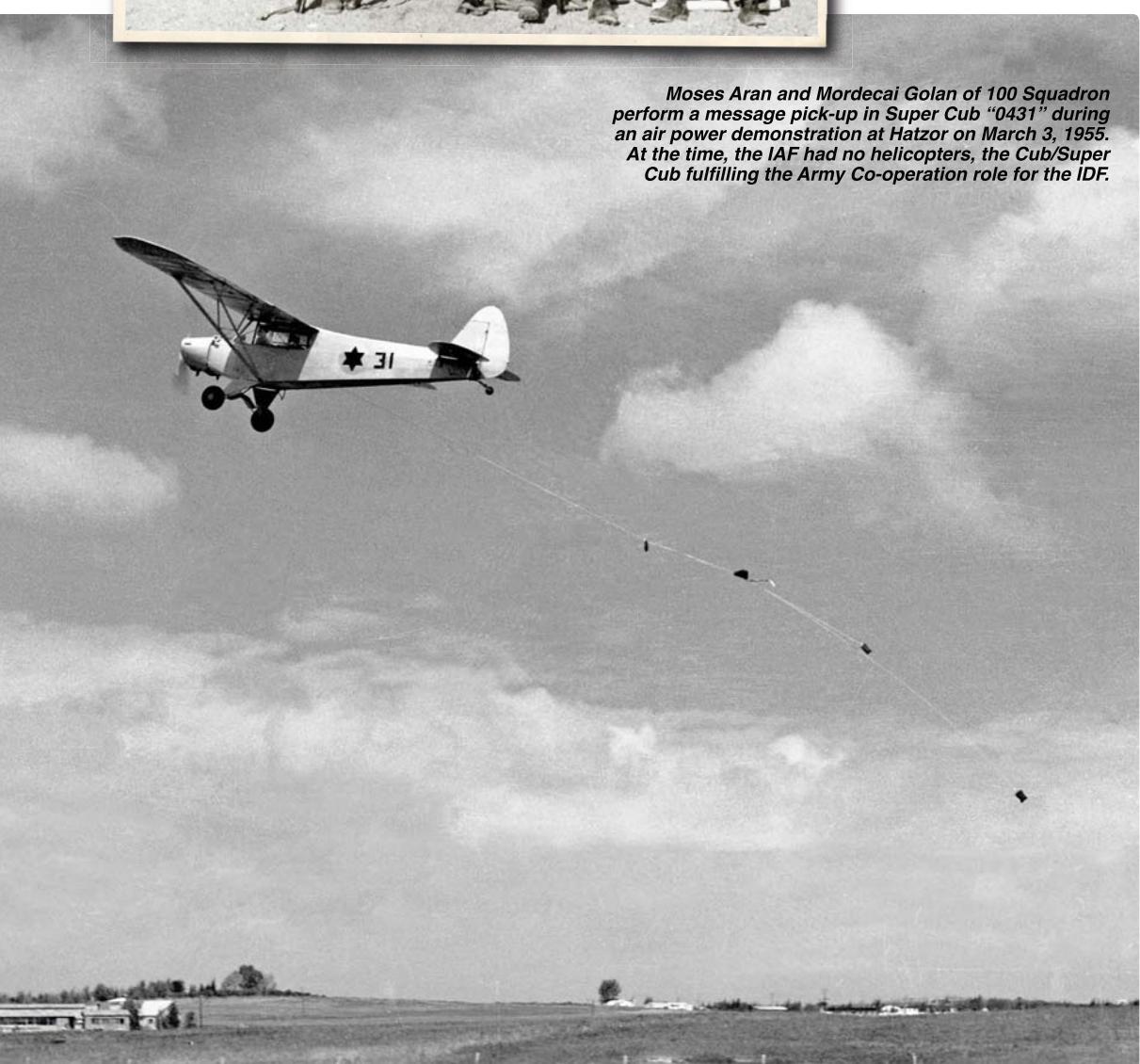
Maximum speed	130 m.p.h.	(208km/h)
Cruising speed	115 m.p.h.	(184km/h)
Stalling speed	43 m.p.h.	(69km/h)
Take-off run	200ft	(60m)
Landing run	350ft	(110m)
Climb	960ft/min	(290m/min)
Service ceiling	19,000ft	(5,800m)
Cruising range	460 miles	(735km)





LEFT The IDF Chief of Staff Moshe Dayan sits on the bonnet of the truck at far left after welcoming the Yarkon scouts and pilots to Eilat on their return. Each pilot stands behind the scout he had flown back from the Sinai Peninsula. From left to right: Enoch Keret behind Igael Talmi; Albert Atar behind Emanuel Shaked; Moses Aran behind scout team leader Asher Levi; Eliezer Levinson behind Yoram Lipski; Solomon Brosh behind Aaron Levran and Isaac Zusman behind Dov Simchoni. The latter had made the May 28 reconnaissance flight with Enoch Keret.

Moses Aran and Mordechai Golan of 100 Squadron perform a message pick-up in Super Cub "0431" during an air power demonstration at Hatzor on March 3, 1955. At the time, the IAF had no helicopters, the Cub/Super Cub fulfilling the Army Co-operation role for the IDF.





ABOVE A Nord Noratlas and a pair of C-47s of the IAF's 103 Squadron at Solomon Field, Sharm el-Sheikh, in November 1956, towards the end of Operation Kadesh — the Israeli occupation of Sinai, for which Yarkon had been a prelude. **BETWEEN** Moshe Dayan (centre) at a parade at Sharm el-Sheikh celebrating the conclusion of Kadesh.

with Signals Officer Igal Talmi, the pair waiting until team commander Asher Levi had taken off in Moses Aran's aircraft before collecting the panels that marked the field and departing.

FROM YARKON TO KADEXH

The Israel Defense Force's Chief of Staff Moshe Dayan welcomed the scouts and pilots back to Eilat. Operation Yarkon was seen as exemplary, a special operation that highlighted the determination and skill of the Israeli military. A joint venture, it had also seen efficient co-operation between IDF troops, IAF pilots and INF sailors. It had been a mission accomplished without a hitch, without confrontation with the enemy and without any unexpected repercussions.

The lessons and outcomes of Yarkon were also deemed to be invaluable. The scouting team had completed the missing link in the IDF's plans to occupy Sinai's southern tip in order to lift Egypt's blockade of the Straits of Tiran. The scouts reported that the track from Ain Furtage to Dahab was definitely passable to all-wheel-drive vehicles and mostly passable to two-wheel-drive vehicles.

Armed with the information gleaned from Yarkon, Israel was set to launch Operation Omer in the autumn of 1955, but ultimately decided against starting a war, even though the Egyptian blockade could be seen as a legitimate *casus belli*. A year later, in October 1956, Israel exploited an opportunity to co-operate with Britain and France in an attack against Egypt, the IDF's Operation Kadesh being Israel's part in the Suez Crisis of that year [watch this space for the Egyptian perspective of Suez — Ed]. By that time, the IDF plan had been modified; the drop of airborne troops into Sharm el-Sheikh was cancelled and



it was Brigade 9, not Brigade 5, that advanced along the route from Eilat to Sharm el-Sheikh — with Asher Levi commanding the vanguard that advanced ahead of Brigade 9's main force — in order to lift the Egyptian blockade.

It was a fitting tribute to the part played by the little Piper during Yarkon that Kadesh ended on November 6, 1956, with a joint action in which an IAF Super Cub escorted an INF ship that landed IDF troops on Tiran Island.



NEW

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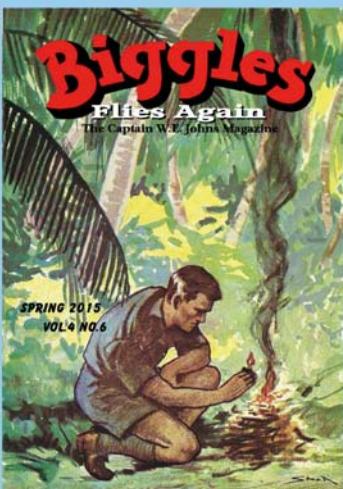
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A VERY BRITISH BIRD OF PREY

In the spring of 1965 aviation enthusiast and keen photographer **DEREK SANVOISIN** spotted an intriguing new supersonic "jump-jet" fighter at a local air display. What was this futuristic interceptor that had evaded any substantial comment in the aeronautical press? We go behind the scenes to provide the inside story of the unusual Scott Furlong Predator

THE YEAR IS 1965 — the height of the Cold War — and it is imperative that Britain's latest supersonic delta-winged fighter, the Predator, enters front-line service as soon as possible. Vital not only for the defence of the western world, the introduction of the radical VTOL interceptor is also crucial to the health of the British aviation industry in the wake of a series of catastrophic defence policy decisions made by the Government over the previous decade. The success — or otherwise — of the Predator is even more important to its manufacturer, the beleaguered Scott Furlong Ltd, mired in a cold war of its own between management and its trade-union-affiliated workforce. So why have we heard so little about this emblematic tale of the British aviation industry's 1960s struggle to survive? Because although the futuristic Predator was indeed built and "flown", it was made of old bits of wood and powered by a secondhand motorcycle engine — more junk-jet than jump-jet.

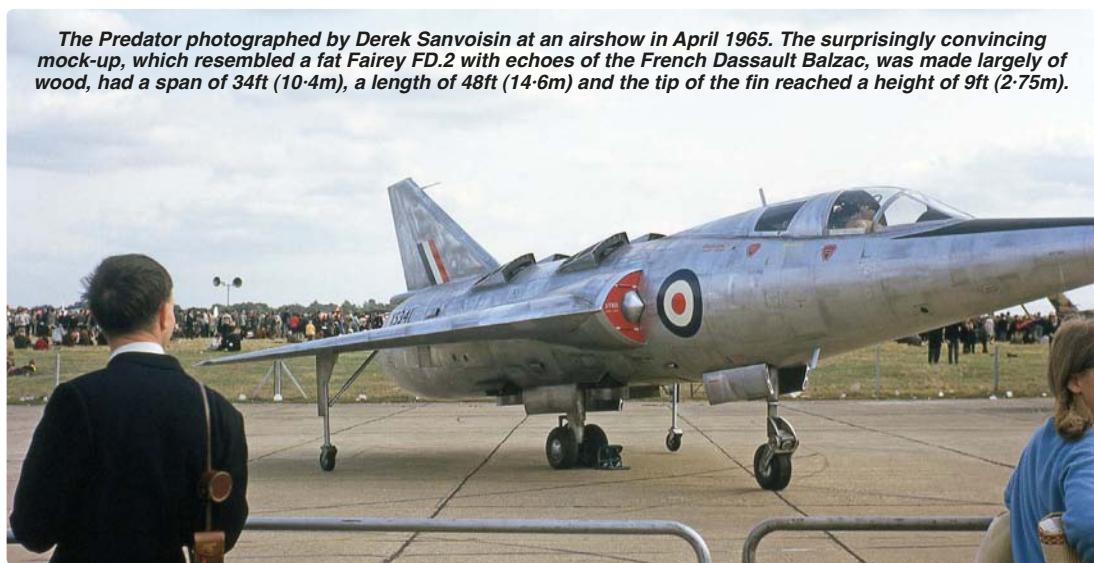
The phoney fighter was built at ATV's Elstree studios for the third series of the British television

series *The Plane Makers*, starring Patrick Wymark as gruff, tough captain of industry John Wilder, in the mould of Sir Frederick Handley Page, on whose company the series was reportedly based.

While the first two series dealt with the development of the "SF.200 Sovereign" jetliner, the third series concentrated on the design and procurement of the Predator two-seat VTOL jet fighter. Constructed by three teams of craftsmen (carpenters, painters and metalworkers) in 2,150 man-hours, the convincing mock-up was made of wood and metal tubing and fitted with a 500 c.c. motorcycle engine which enabled it to be taxied at up to 40 m.p.h. (64km/h) for filming sequences.

According to ATV's publicity department, the Predator was "built to special plans by a team of experts who say that, if fitted with real aero engines, it would in fact fly"; clearly a triumph of optimism over reality, but the Predator was nevertheless hoisted aloft by a crane, making its maiden "flight" during filming for the third series. What happened to this state-of-the-(carpenter's)-art fighter after filming remains uncertain; readers may know more — over to you! **NS** 

The Predator photographed by Derek Sanvoisin at an airshow in April 1965. The surprisingly convincing mock-up, which resembled a fat Fairey FD.2 with echoes of the French Dassault Balzac, was made largely of wood, had a span of 34ft (10.4m), a length of 48ft (14.6m) and the tip of the fin reached a height of 9ft (2.75m).



The military serial XS341, actually one of a series allocated to drones, was applied to the Predator, further lending it the appearance of a genuine test aircraft. The attention to detail was impressive, the Elistree studio team adding touches to increase the prop's credibility, such as the bullet fairing beneath the rudder and the four air intake ducts, similar to those incorporated into the French Breguet VTOL testbed, on the top of the fuselage. The Predator was fitted with a motorcycle engine, although it is unclear exactly how it drove the mainwheels. If you know what happened to the Predator after filming had finished, please feel free to contact the Editor!





ron flockhart's **PONY EXPRESS**



PHILIP JARRETT COLLECTION

In 1961 Scottish racing driver Ron Flockhart set his heart on establishing a new world speed record for a flight from Australia to the UK. Club-trained and with limited professional backing, Flockhart set about acquiring an Australian-built P-51 Mustang for the epic 11,500-mile flight. **NEIL FOLLETT** details the intrepid Scotsman's valiant but ill-starred assault on the record and what would prove to be his fatal attraction to a thoroughbred . . .



IAN LESLIE VIA AUTHOR

THIS IS A tale of two Mustangs. Both began their lives on the production line at the Commonwealth Aircraft Corporation in Melbourne, Australia, both saw service in the Royal Australian Air Force (RAAF), escaped the smelter and passed into civilian ownership. Both were added to the UK civil register — but neither ever landed on British soil.

THE STARTING LINE

William Ronald "Ron" Flockhart was born in Edinburgh, Scotland, on June 16, 1923, and began his motor racing career in 1951, before going on to win the *24 Heures du Mans* race in 1956 and 1957 while driving a D-Type Jaguar with the Scottish Ecurie Ecosse team. Flockhart also participated in Formula One races, entering his first — the British Grand Prix — in 1954 and continuing throughout 1956–60. The Scotsman competed in 14 races with five different teams, his best result being a third in the 1956 Italian Grand Prix at Monza, achieving a podium finish.

Flockhart also displayed an early interest in flying, owning Auster 5 G-ANHO during 1954–57, and becoming one of the first Formula One drivers to fly their own aircraft to race meetings. In the early 1960s Flockhart became interested in record flights between England and Australia,

OPPOSITE PAGE, TOP A hand-tinted image of the Ecurie Ecosse 1957 Le Mans team, with Ron Flockhart giving the thumbs-up in the distinctive blue Jaguar D-Type in which he and Ivor Bueb (to Flockhart's left) won the 24hr race. **OPPOSITE, BOTTOM** Flockhart poses under the wheelwell of Mustang G-ARKD in 1961. **ABOVE** Filling the Mustang's droptanks at Alice Springs on February 28, 1961, during the first leg of Flockhart's attempt on the Australia—UK record.

noting that the record was held by Arthur Clouston and Victor Ricketts in the D.H.88 Comet G-ACSS *Grosvenor House*. The Comet won the 1934 MacRobertson Air Race and was the aircraft in which Ricketts and Clouston flew from London to Sydney (and then on to New Zealand) in 80hr 56min in March 1938. Flockhart considered that this record could be bettered. He was also interested in bettering the standing solo Australia—UK record, held by H.F. "Jim" Broadbent, who had left Darwin in Percival Vega Gull G-AFEH on April 18, 1938, and landed in England on the 22nd having covered 9,612 miles (15,470km) in five days 4hr 21min, the last pre-war record flight between the two countries.

In October 1960 British holding company United Dominions Trust (UDT), through its subsidiary Laystall Engineering, formed an agreement with the British Racing Partnership to form a motor-racing organisation known as UDT Laystall Racing. As an extension of its



JOHN HOPTON COLLECTION

ABOVE Mustang VH-BVM at Bankstown, Sydney, in 1960, before its purchase by United Dominions Trust in early 1961 for Flockhart's proposed record attempt. It was the first Australian Mustang to be sold on the civil market and was used by "Wac" Whiteman to set a new speed record for the crossing of the Tasman Sea in July 1953.

racing activities, UDT became involved with the purchase of Commonwealth CA-17 Mustang Mk 20 VH-BVM (c/n 1330) for Flockhart's record attempt. The aircraft had originally been built by the Commonwealth Aircraft Corporation as A68-5, the fifth of a batch of 80 built from imported components. It was taken on charge by the RAAF on July 6, 1945, and served briefly with No 78 Sqn RAAF before being put into storage. By the time it was demobbed in 1953 it had accrued a mere 35 flying hours.

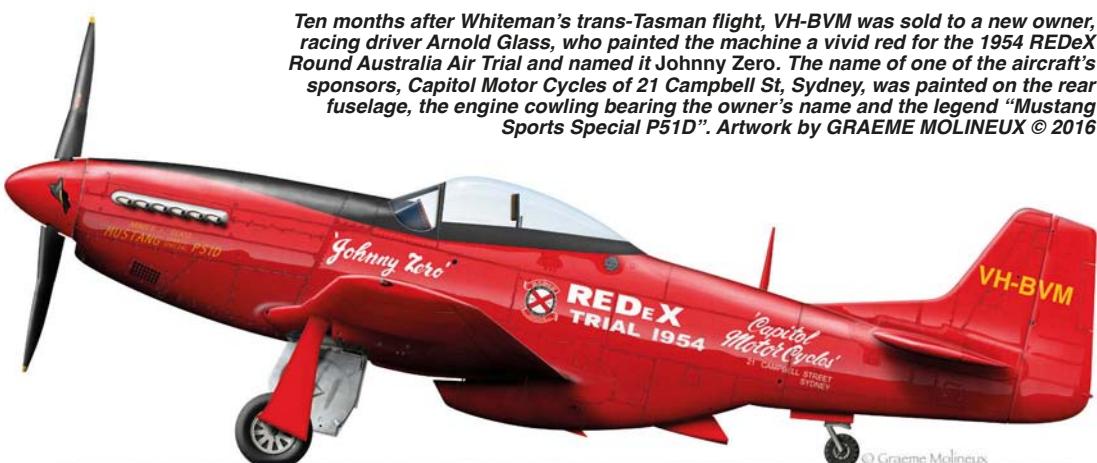
On January 30, 1953, the Mustang was purchased for £100 from the RAAF by former RAF and RAAF pilot James L. "Wac" Whiteman, who intended to enter the aircraft in the 1953 London to Christchurch (New Zealand) Air

Race to be held that October. To ascertain the suitability of the Mustang for the forthcoming race, Whiteman made a successful attempt on the trans-Tasman record, flying from Sydney to Auckland in 3hr 31min on July 17, 1953.

The range of the Mustang, named *Rebel*, was extended by fitting droptanks which were to be jettisoned over the Tasman Sea. When he attempted to jettison them, however, the rear attachment points did not release and the empty tanks hung down, making the aircraft almost uncontrollable. He was planning to ditch when they finally broke away.

Whiteman had initially made plans to have the Mustang's wing strengthened for the mounting of a pair of ramjets, one on each wing,

Ten months after Whiteman's trans-Tasman flight, VH-BVM was sold to a new owner, racing driver Arnold Glass, who painted the machine a vivid red for the 1954 REDeX Round Australia Air Trial and named it Johnny Zero. The name of one of the aircraft's sponsors, Capitol Motor Cycles of 21 Campbell St, Sydney, was painted on the rear fuselage, the engine cowling bearing the owner's name and the legend "Mustang Sports Special P51D". Artwork by GRAEME MOLINEUX © 2016



© Graeme Molineux



ABOVE Looking factory-fresh in its new United Dominions Trust red and white colour scheme, G-ARKD sits in the sunshine outside the Fawcett Aviation hangar at Bankstown. The Mustang was put on the British register on February 18, 1961, test flown two days later and issued its British Certificate of Airworthiness on February 24.

to improve the aircraft's climb performance. Reportedly, a ramjet was bench-tested but broke free from its mount and ended up in a neighbour's kitchen. Unsurprisingly, Australia's Department of Civil Aviation (DCA) refused to approve and certificate the modification.

When Whiteman saw that both the RAF and RAAF had entered state-of-the-art military aircraft in the London—Christchurch race he withdrew his entry, realising the Mustang would be no match for the jets.

By now registered as VH-BVM, the Mustang was sold on May 31, 1954, to Arnold J. Glass, a fellow racing driver against whom Flockhart would compete in the 1961 and 1962 New Zealand Grand Prix races. Glass reportedly purchased the Mustang with winnings from a racehorse, *Johnny Zero*, hence the name being painted on the aircraft.

In 1954 Glass entered VH-BVM in the REDeX Round Australia Air Trial, sponsored by the eponymous engine lubricant company. The Mustang started the trial, but withdrew during the second leg as Glass considered his handicap to be unrealistic. Most of the other entrants were de Havilland Tiger Moths, Percival Proctors, Austers and Wackett Trainers. He was reported as saying: "I have the fastest aircraft in the trial, but if I had continued, I would have ended up losing the biggest number of points".

The Mustang was used less and less over the next few years, but was employed for target-towing experiments with Fawcett Aviation in 1959 and flown by another Mustang owner, A.

Oates, before being sold on to UDT for around £2,000 with around 100 flying hours on the clock. Flockhart was also able to obtain 75 US gal (63 Imp gal) combat fuel tanks for about £7 each.

PREPARATIONS BEGIN

With the end of the Antipodean motor racing season in early 1961, preparations began for the flight to the UK. Rolls-Royce ran checks on the Packard Merlin 38 engine, which had only run 110hr since new, and which had never been "through the gate". The magnetos were overhauled in Scotland and Smiths Australia set to work on overhauling the cockpit instruments.

Preparatory work on the airframe was undertaken at the Illawarra Flying School, which modified the fuel system by introducing a manual device by which the system could be depressurised. Two static vents were incorporated into the airframe under the cockpit sill, each containing a valve. This would enable Flockhart to run the droptanks dry without the risk of sucking air into the system. The system would then be repressurised from the exhaust side of the vacuum pump to assist initial transfer. This worked well, although a stiff bootful of rudder was required to counter the rolling moment owing to the change in torque as a tank emptied.

In the limited space available in the Mustang's cockpit two German Becker VHF radio sets were installed, which provided 36 communications channels, and Lear T12 automatic direction finding (ADF) equipment was fitted in the



ABOVE Flockhart poses beside the Mustang at Bankstown during a photo-call in the days before his record attempt. As chief sponsor, United Dominions got pride of place on the engine cowling beneath the exhaust stacks, with the legend "Rolls-Royce Mustang XX" above (despite the engine being an American-built Packard Merlin 38).



ABOVE Bearing the legend "Sydney—London" on the rear fuselage, the Mustang is taxied out of the Fawcett hangar by Flockhart. The two white 75 US gal combat droptanks brought the total fuel capacity of the Mustang to 420 US gal (350 Imp gal) when added to the tanks in the fuselage (85 US gal) and wings (9½ US gal each).

Flockhart in the cockpit of G-ARKD at Bankstown shortly before setting off on the record attempt. Although an experienced pilot, Flockhart held no instrument ratings and had never flown the Mustang at night. For the majority of the flight he planned to navigate "contact" — using visual landmarks — with 1:1,000,000-scale maps.



position usually occupied by the gunsight. No VOR, ILS, HF radio or marker-beacon receiver equipment was fitted — Flockhart held no instrument ratings. Normalair supplied the oxygen equipment, Dunlop provided new tyres and Lodge delivered new plugs. Rolls-Royce suggested that the Merlin be opened up to full power every half-hour during the flight and again briefly during descent and approach.

Final preparations and modifications were undertaken by Fawcett Aviation at Bankstown Aerodrome in Sydney, and the Mustang was officially added to the British register on February 24, 1961, as G-ARKD, in the name of Ronald Flockhart. In the days leading up to his departure for the UK Flockhart had logged a mere 12 flying hours in the Mustang.

In March 1961, Flockhart told British magazine *Flight* that flying a Mustang for the first time was like "driving an ERA [racing car] after a sports car; things happen very quickly". He also admitted that it had taken some time to get used to the Mustang's long nose and the technique of a curving approach, and had accordingly suffered "one or two bumpy landings", but had quickly come to like the aeroplane very much. Flockhart noted that although the Mustang was big and powerful, "it was amply stable for the long hours of steady, level cruise".

The planned route for the flight was Sydney—Alice Springs—Darwin—Sourabaya—Singapore

—Rangoon—Calcutta—Karachi—Bahrain—Beirut—Brindisi—Nice and on to London, with overnight stops at Singapore, Karachi and Brindisi. Flockhart's plan was to fly only during daylight hours and in segments of a maximum of 5hr. All fuelling arrangements along the route were to be made by Esso, which Flockhart found to be "unfailingly helpful and efficient".

SETTING OFF

On Tuesday, February 28, 1961, Flockhart and G-ARKD, painted in an overall bright red colour scheme with white detailing, departed Sydney for the first stop at Alice Springs. En route from the latter to Darwin, Flockhart experienced a magnetically charged dust storm, which affected his ADF equipment. He settled in at 12,000ft (3,700m) and followed the faint line of a solitary railway across the endless red terrain to Darwin.

The next day Flockhart departed Darwin for Sourabaya on Java. Well out over the Timor Sea he saw an ominous line in the distance, marking an inter-tropical front piling clouds up to 50,000ft (15,000m) and higher. From 12,000ft he dived to low altitude to find a hole in the milky mist. After 10min the Mustang popped through the other side of the front with most of the paint on the Mustang's leading edges stripped off. The diversion had cost a substantial amount of fuel and Flockhart elected to divert to Baucau on East Timor for replenishment.

Flockhart at the controls of G-ARKD during a test flight from Bankstown. The RAAF's CA-17 Mustang Mk 20s were built from sets of parts supplied by North American Aviation (plus Packard Merlin engines) and assembled by the Commonwealth Aircraft Corporation (CAC). The first CAC-produced example, A68-1, made its first flight on April 29, 1945.

PHILIP JARRETT COLLECTION



RIGHT When asked what it was like flying a high-performance piston-engined fighter on a route almost exclusively reserved for large airliners and transport aircraft, Flockhart replied that it was "like driving a Cooper [racing car] on a bus route . . ."

After a quick refill from fuel kept in 45gal drums in a thatched hut, Flockhart took off for what he later recalled as "the loveliest part of the trip" — east-north-east over the Balinese islands and coral atolls to Singapore. The maximum endurance of the Mustang was 7hr, for six of which Flockhart could be on oxygen. Typical cruising speed was 225kt at 12,000ft (3,700m), although the speed would increase to 280kt with the periodic opening of the throttle, as per Rolls-Royce's suggestion.

The diversion to Baucau meant a late arrival at Singapore, where Flockhart was further delayed by an accident which had closed the runway at his next stop, Rangoon. Having received the all-clear to depart, Flockhart headed into the darkness, his first experience of flying the Mustang at night. Finding that the ADF equipment functioned better at night, he followed airways all the way to Rangoon, where the scarlet Mustang received a great deal of attention, not least from the Czechoslovakian crew of a CSA Tupolev Tu-104.

ACROSS INDIA

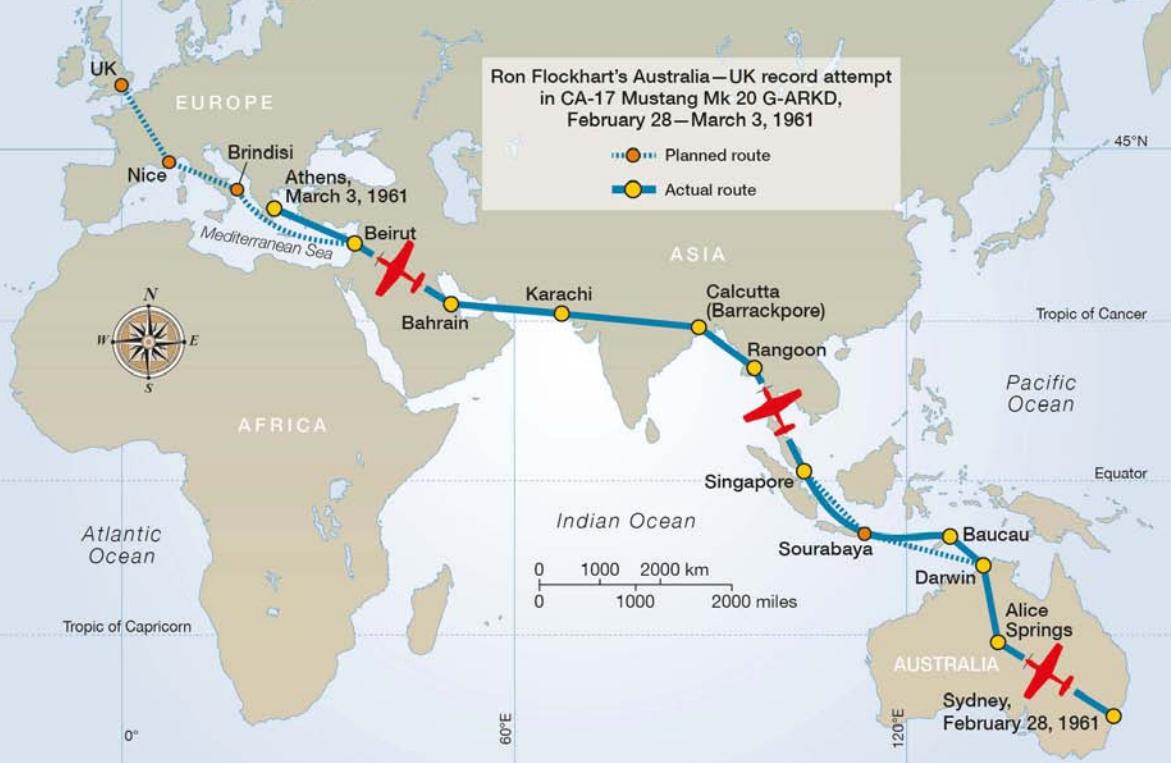
The following morning there was still plenty of interest in the aircraft, and on departure for Calcutta Flockhart held the Mustang down on take-off until he could pull up 4,000ft (1,200m) almost vertically into cloud.

Navigating largely by means of "contact flying" — using established landmarks — Flockhart experienced difficulties on the leg to Calcutta, becoming embroiled in a cloud layer



PHILIP JARRETT COLLECTION

at 2,000ft (600m), which caused him to miss the let-down beacon into Calcutta and overshoot, forcing him to put down at Barrackpore, some 15 miles (25km) north of Calcutta. After a swift refuelling, Flockhart was off again for the longest leg of the journey, across India and Pakistan to Karachi, which he completed in 5hr 50min using 43gal/hr of fuel. Flockhart later related that he ate only a few Horlicks tablets on this leg, and refreshed himself on landing at Karachi with ginger beer kept cold in the ammunition bays.



MAP BY MAGGIE NELSON

At Karachi the Mustang was turned around in less than an hour, Flockhart taking off in the moonlight to follow the Iranian coast to Bahrain. As he later told *Flight*: "Navigation at night was wonderful. There is a great tranquility about it. The isolation and the beauty contrasts sharply with the actions of those on the ground, who try to tie you down with streamers of paper. Flying at night in the moonlight, the only shadows are on the surface".

It was still night when Flockhart landed at Bahrain, where he discovered that air had been leaking from the port mainwheel oleo. This caused little concern, however, and after a safe landing the undercarriage was quickly repaired by the RAF. Flockhart was soon off again, to follow an oil pipeline to the mountains of Lebanon and Beirut. He was cleared — and then recalled — by Damascus air traffic control shortly after passing over the city, but, short of fuel, he elected to continue to Beirut and face the consequences there. It was indeed at Beirut where the trouble started.

Despite the diversions and delays owing to minor repairs, Flockhart was still well ahead of his own schedule when he taxied out at Beirut for the next leg to Brindisi on March 3. Confusion on the ground, however, led to the Mustang's coolant boiling while Flockhart was held while other aircraft landed. The Mustang finally departed for Brindisi, but poor weather forced Flockhart to divert to his nominated alternate, Athens.

Anxious not to lose any more time, Flockhart

refuelled quickly and requested clearance from the tower, which was refused as no flightplan had been filed. Requesting to file an airborne flightplan, Flockhart was refused again, the tower demanding that he pay landing fees, despite the fact that these had already been seen to by Esso. As *Flight* elegantly put it: "Temperatures rose — in the tower, in the cockpit and in the cylinder heads". Realising that resistance was futile, Flockhart retired for a rest, before trying again in a few hours. With the paperwork sorted, Flockhart returned to the Mustang in the early morning, but found on starting that steam was issuing from the cowling. Refilling the coolant system, he found that the coolant was running out between the distorted head joints of Nos 3 and 4 cylinders on the starboard bank. By this time he was 12hr behind his schedule, but two days ahead of the solo record.

Exhausted and frustrated, Flockhart left G-ARKD at Athens and continued to London by commercial airliner to be married as planned a few days later on March 11, 1961. The Scotsman subsequently told *Flight* that it was "not the flying, nor navigation, nor preparation which was responsible for the failure. It was an air traffic system out of touch with the individual needs of a type of flying that has not yet, by any means, disappeared from the global scene".

On September 7, 1961, the Mustang was severely damaged by a cockpit fire while being taxied at Athens airport. It was withdrawn from the UK register on November 21 the same year,



ABOVE A dejected Flockhart at Athens on March 3, 1961. "Tired and rather angry, but not despondent, Ron Flockhart abandoned at Athens his valiant attempt to fly solo from Sydney to London faster than anyone in a piston-engined aeroplane had ever done before" — thus ran a news item in the March 10, 1961, issue of Flight.



ABOVE The Mustang at Athens after the cockpit fire — note the melted canopy — on September 7, 1961. The aircraft was struck off the British register that November, but continued to languish at Athens airport throughout the 1960s. Its remains appear to have been imported back to the UK in 2012, presumably for a future restoration.

Commonwealth CA-18 Mustang Mk 21 VH-UWB, formerly A68-113, at Moorabbin shortly after receiving its civilian registration in February 1958. It was not the first aircraft on the Australian register to wear these letters, a de Havilland D.H.60 Moth having been allocated the same registration in the 1930s. The Moth was destroyed when a Vultee Vengeance stalled and crashed on top of it in 1944.



and remained at Athens. In June 2012 Mustang G-ARKD was re-registered to the Classic Flying Machine Collection Ltd at Dereham, Norfolk, in the UK. It appears to be the remains of Flockhart's Mustang to be used in a restoration.

TAKE TWO

Not to be deterred, Flockhart began looking for another Australian Mustang within months for a second attempt on the record that had eluded him. The aircraft chosen was former RAAF Mustang A68-113 (c/n 1438). One of 120 licence-built Packard Merlin-powered CA-18 Mustang Mk 21s, the aircraft had been delivered to the RAAF on April 1, 1948, going directly into storage before being issued to No 78 Wing RAAF in late 1949.

It was back in storage again by the summer of 1950, but in May 1953 it was delivered to the RAAF's No 10 Sqn at Garbutt airfield near Townsville in Queensland for target-towing duties, during which it was painted silver with a red spinner, yellow fuselage bands and gloss-black stripes on the undersides of the wings. In November 1956 it was returned to storage at No 1 Air Depot.

On August 21, 1957, A68-113 was struck off charge and sold to British national John W. Brookes, who operated Brookes Aviation Services at Moorabbin Airport in Victoria. Brookes painted the Australian registration VH-JWB (his initials) in all the usual places. The registration was not available, however,

being reserved for RAAF callsigns. A stroke of the paint brush soon converted VH-JWB to VH-UWB, which was officially registered on February 13, 1958. At the same time the Mustang was fitted with a Packard Merlin V-1650-7 engine driving a K6523A-25 propeller. Brookes proposed to add a second seat to the Mustang, but the DCA once again stepped in and refused permission to do so.

On April 5, 1962, the Mustang was sold again, this time to AREF Ltd of Ascot, Berkshire, in the UK, to become G-ARUK. Flockhart had announced his intention to try and beat the record again, with plans to follow the route Melbourne—Sydney—Darwin—Singapore—Madras—Bahrain—Brindisi—London, starting on April 16, 1962. Jock Garden, chief flying instructor and manager of the Civil Flying School, the flying training arm of Brookes Aviation, recalled in his memoirs:

“Ron [Flockhart] arranged to buy VH-UWB from John Brookes, and Brookes Aviation undertook a complete overhaul on the aircraft. Rolls-Royce, as a co-sponsor [of his next record attempt], sent out two engineers from England to service the engine; the aircraft was repainted in red and re-registered in the UK as G-ARUK.

“I flew Ron over to Essendon Airport in the [Beech] Debonair early in 1962 and during the flight I asked if he had any recent instrument flying experience. When he told me he had none in the last 18 months, I suggested it would be wise for him to gain recent instrument flying



ABOVE Sporting a striking yellow and very dark blue colour scheme, Mustang VH-UWB is seen here at Ballarat Aerodrome, north-west of Melbourne, in November 1961. In July that year, the incorrectly refitted canopy slid back during flight and left the pilot temporarily unconscious; thankfully he recovered and a safe landing was made.

practice in view of the intended long flight, but he did not follow up on that advice.

"I had the pleasure of doing the flight testing of the Mustang on March 19, 1962, after its extensive servicing and it was in perfect condition with the Merlin the smoothest running engine I had ever encountered.

"A couple of days before he intended setting out on his record attempt Ron was to fly to Sydney to have maintenance done on his ADF unit. The weather conditions on April 12 were bad, with low cloud and rain, but Ron was determined to go. This proved to be a fatal decision as, within only a few minutes after departure, he lost control in cloud over the Dandenong Range and entered a spiral dive

from which he could not possibly recover. He was killed instantly."

The official report of the accident by the Australian Department of Civil Aviation gives the following conclusion: "While there is insufficient evidence to establish conclusively the cause of the accident, the possibility that the pilot temporarily lost control of the aircraft while circling in cloud, and that it subsequently stalled during the recovery and turn to avoid high terrain, cannot be excluded".

Flockhart was flying the Mustang from Moorabbin to Bankstown to conduct fuel consumption tests and have the ADF equipment serviced. After encountering low cloud, the pilot reported that he was returning to Moorabbin.

In April 1962 VH-UWB was sold to AREF Ltd of Ascot and put on the British civil register as G-ARUK. Flockhart's colours for his second attempt on the Australia—UK record would again be a vibrant red, with sponsorship from Air BP and Air-India. The Australian phrase "She'll be right" was painted on the lower cowling.

Artwork by GRAEME MOLINEUX © 2016





ABOVE Flockhart beside G-ARUK outside the Brookes Aviation hangar at Moorabbin on the morning of his final fatal flight on April 11, 1962. The Scotsman was anxious to get to Bankstown to conduct fuel consumption tests and oversee modifications to the navigation equipment in time for his planned departure for the UK on April 16.

The Mustang then changed course some 140° before entering a narrow gap between cloud-obscured hilltops in the Dandenongs. The report stated that "the pilot circled in the vicinity of Kallista several times at low altitude and for the most part in cloud. The aircraft then emerged below cloud at a height of approximately 1,300ft [400m], carried out a left turn probably to avoid higher terrain and, in the course of this turn, the nose dropped sharply and the aircraft struck trees and the ground at a steep angle, while rolling and turning to the right".

THE FINAL CHEQUERED FLAG

At the time of the accident Flockhart held a British Private Pilot's Licence endorsed for single-engined landplanes under 12,500lb (5,670kg) maximum permissible all-up weight. His total flying time was 961hr of which 69 were on Mustangs. During the six months immediately before the accident he had flown only 5hr. He was not rated for instrument or night flying. In late 1960 he had undergone about 21hr of ground-based Link trainer instruction on ADF, ILS and VDF procedures, but his logbook showed no record of any instrument flying or Link trainer instruction since that time.

Flockhart's flying achievements were substantial and deserve a great deal of credit; his Mustang flight from Australia to Athens had been made with limited professional backing by a club-trained pilot. Sadly, he never got the chance to finish the job — with his death on April 12, 1962, his final race had been run.



ABOVE Down but not yet out — Flockhart takes some refreshment at Athens after his record attempt came to an end in March 1961. At the time of his death, Flockhart was only 38 years old. At his funeral at Springvale, near Melbourne, on April 17, 1962, Flockhart's flying helmet and goggles, along with red poppies, were rested on his Union Jack-draped coffin.



THE NEW FRONTIER

BRITAIN'S CONNECTION TO THE X-15

While researching his new book, *Into The Black*, **ROWLAND WHITE** discovered a little-known connection between NASA's remarkable X-15 and Britain's test-flying community. He asked the late **Cdr Geoffrey Higgs** and **Capt Eric "Winkle" Brown** about the strong bond between British and American test pilots during one of aviation's most adventurous periods

GOMMANDER GEOFFREY Higgs stepped off the short ladder and down on to the Lockheed F-104B Starfighter's rear ejection seat. During his decade-long career as a test pilot he had flown all manner of machines, from the very old, like the pre-war Hawker Hart biplane, and very slow, like the Fieseler Storch, Germany's insect-like wartime liaison aircraft, to scorchingly fast modern fighters like the English Electric Lightning. But the pencil-thin stub-winged Starfighter was something else. A couple of days earlier he'd never even seen one. He looked over the jet before lowering himself into his seat.

It was still morning, but the sun was rising fast over Rogers Dry Lake in the Mojave desert, reflecting off the sleek bare-metal curves of the '104's fuselage and burning off the chill of the

night that had clung to Edwards Air Force Base. It's a strange looking aeroplane, he thought; built for speed and not much else.^{1*} And today was to be all about speed. As he pulled his harness tight, Higgs was eager with anticipation.

At 0924hr on September 28, 1965, one of NASA's pair of Boeing NB-52s, 52-0003, known as *The High and Mighty One*, or alternatively *Balls Three*, lifted from the runway, dipping its nose as it stayed low gathering speed, before climbing away to the north-east. Tucked beneath the big bomber's starboard wing was another aircraft, one that made even the Starfighter look sluggish; the record-setting North American X-15 rocket-powered research aircraft. It was — and remains — the fastest manned aircraft ever built. And the Englishman was on his way to watch it fly.

Geoff Higgs had always regretted missing

* ENDNOTE references, indicated by numbers at appropriate points in the text, are provided at the end of the feature.



HIGGS FAMILY ARCHIVE



NASA

out on combat. Too late, by a whisker, for operational flying duties during the Second World War, he was with a front-line fighter squadron for a matter of days before the atomic bomb was dropped on Hiroshima, and barely a month before Japan surrendered. During Higgs's brief wartime service with the Fleet Air Arm's No 891 Sqn, Northern Ireland was the closest he got to the fighting.

MEETING "KINCH"

Frontline tours on Vought F4U Corsairs and Supermarine Seafires followed until, after narrowly missing a posting to a Hawker Sea Fury squadron serving in Korea, he embarked in HMS *Rocket* (H92) to earn his full watchkeeping certificate. Higgs was tempted to give up flying altogether and join the general list. The Royal Navy, however, had other plans for him, and in February 1954 Higgs took his place on Empire Test Pilots' School Course No 13 at the Royal Aircraft Establishment (RAE) at Farnborough. Eager to get started, one of his new classmates, Iven C. Kincheloe Jr USAF — "Kinch" — had already been there a week.

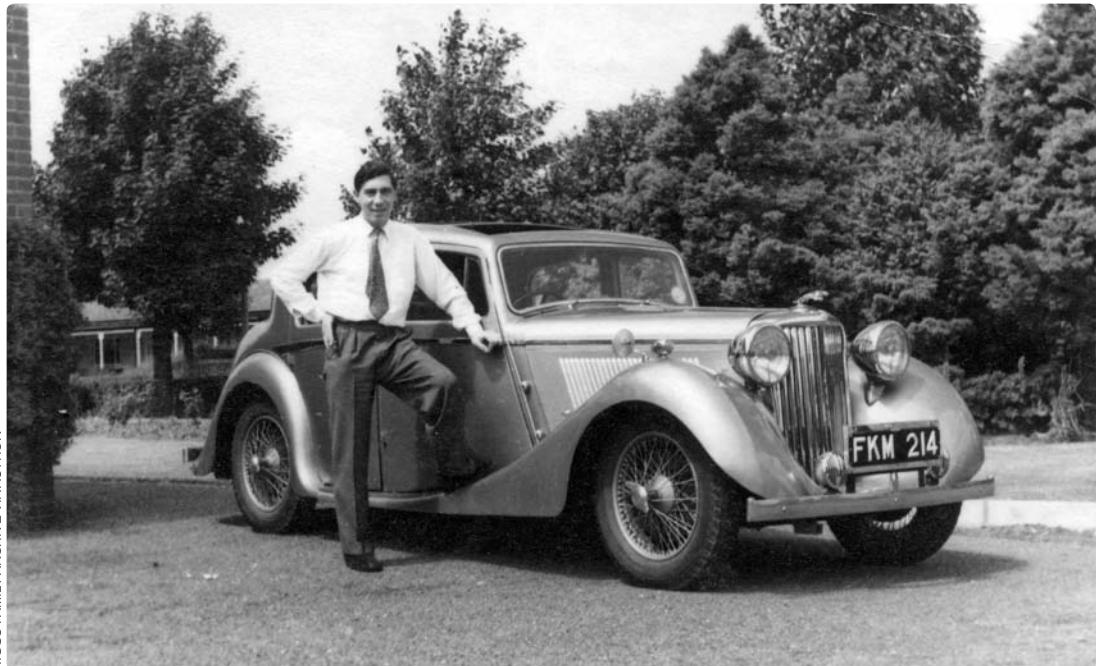
While Higgs had been frustrated by the Navy's failure to send him to Korea, Kinch had been slicing through "MiG Alley" in a swept-wing jet-powered North American F-86 Sabre. Always impatient, Kinch had seen his tour of duty with the 325th Fighter Squadron (FS) of the 4th Fighter Wing (FW) begin slowly. He was determined to become an "ace", but after 16 missions he was still unable to chalk up even a damage claim. Then he was reassigned to the new 51st FW, formed by Second World War ace Col Francis "Gabby" Gabreski, and his fortunes changed. Kinch soaked up the knowledge, experience and insight on offer from Gabby and

OPPOSITE PAGE The third North American X-15, 56-6672, streaks away from F-104B chase aircraft 57-1301 on September 28, 1965. Artwork by IAN BOTT © 2016. **ABOVE LEFT** Commander Geoff Higgs aboard the aircraft carrier USS Lexington during Buccaneer trials in the USA in 1965. **ABOVE** Captain Iven C. Kincheloe Jr in the cockpit of an F-104. "Kinch", a born pilot, made his first solo flight on his 16th birthday and famously went on to be hailed as "America's first spaceman", despite the epithet being technically untrue.

his team of senior pilots. When he wasn't asking them how he could get better, he was hitting the textbooks, desperate to learn all there was to know about fighter combat. On January 25, 1952, his luck changed.

Diving out of the sun in his F-86, Kinch closed to within 800ft (250m) of a flight of three Soviet-built MiG-15 jet fighters before firing his 0.5in-calibre guns. His tracers stitched across the MiG from wingtip to wingtip before it folded into a fireball. Three months later Kinch scored a double kill after persuading Gabby to adopt tactics the young pilot had devised and tested on his own initiative. By May, when his tour with the 51st came to an end, Kinch was a double ace with a Silver Star and Distinguished Flying Cross to his name. What he really wanted to do, however, was become a test pilot.

With his fine war record and exceptional flying skills he felt sure that the USAF would agree. Instead, he was demoted and sent to work as a gunnery instructor at Nellis Air Force Base in Nevada. With a surplus of captains, the flying branch didn't have the space to let Kinch's spot combat promotion stand, however deserving its recipient seemed to be. The application Kinch sent to the test pilot school went unacknowledged. Undeterred, he devoted his time to accumulating flying hours whenever and wherever he could.



ABOVE In February 1954 Geoff Higgs was selected to join the Empire Test Pilots' School, then attached to the RAE at Farnborough, and decided that he needed a car more befitting his status as a prospective test pilot than his old BSA saloon. Accordingly he acquired this 1938-vintage 1·5-litre SS Jaguar, which he bought in Bristol for £300.

Kinch drove out to Edwards Air Force Base in California to doorstep the Air Force's top test pilot, Gen Frank K. "Pete" Everest, a man well on his way to becoming the fastest man alive. Kinch's *chutzpah* impressed Everest and it was a meeting that would, in time, prove fruitful. But at the time, even Everest's support could not stop a second, then a third, application to the test pilot school going nowhere.

For all his undoubted ability, Kincheloe's masterplan was unravelling. Eventually, an old friend in the Pentagon, with whom Kinch had served in Korea, asked the USAF Personnel Office if anything could be done. Edwards was full, came the reply. A thought flashed through the personnel officer's mind. "Wait a minute," he said, "we have an exchange deal with the British, in which we send two pilots to their test school. There's a new exchange coming up and we haven't made any assignments yet. Do you think Kincheloe would like that?"²

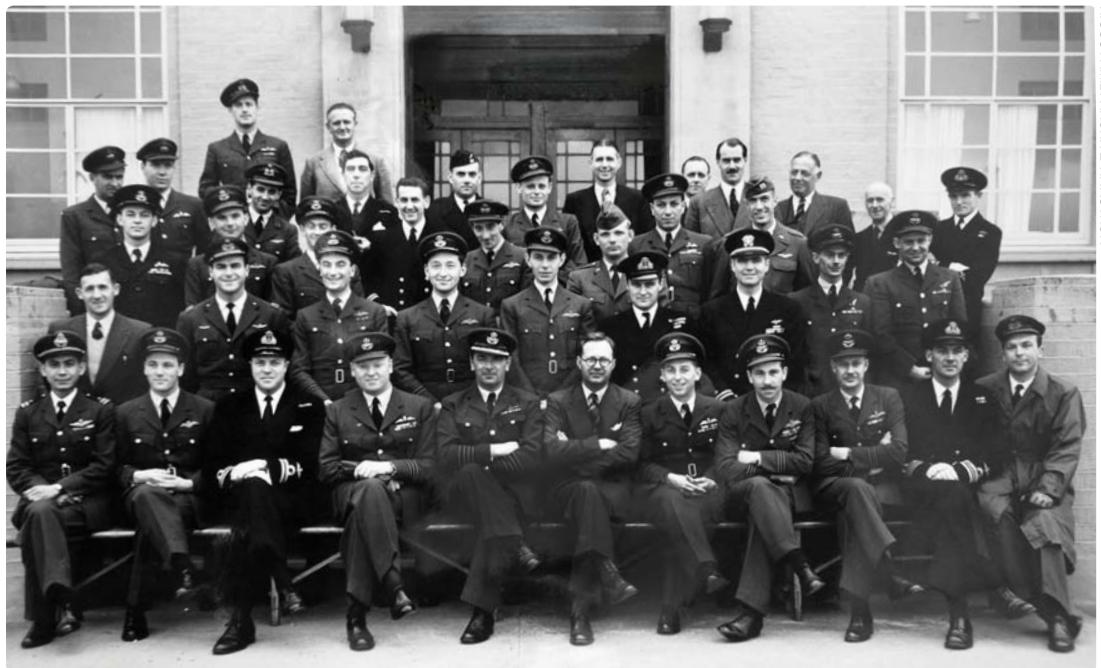
LIFE AT FARNBOROUGH

Kincheloe revelled in the opportunity given to him at Farnborough. In Korea he'd shared a ten-year-old houseboy called Kim, who would clean his clothes and shine his shoes; at the Empire Test Pilots' School (ETPS) he was provided with a batman, in rolled-up shirtsleeves and braces, called Mr Morley. Every morning the imperturbable Morley would wake Kinch with a cup of tea, which the latter would then tip down the sink at the first opportunity. He may

have baulked at starting his day with a strong cup of dark brown British "Rosie Lee", but Kincheloe threw himself into everything else with unbridled enthusiasm.

Impressed by a fellow student who drove around in a Lagonda into which he'd bolted a diesel engine from a wartime midget submarine, Kinch bought a 25-year-old Austin London taxi with spoked wheels and a hood at the back. Christening it "Lizzie", the irrepressible American painted various aviation signs, such as "Caution: Ejection Seat" all over it. Five or six students would squeeze into the cab, while Kinch, wearing a deerstalker and honking Lizzie's clown-car horn, drove them from one adventure to the next. It was Silverstone one day, a trip to see the Harlem Globetrotters at Wembley the next. During the latter, Kinch, unfamiliar with both the taxi's tight turning circle and driving on the left, damaged the bumper and mudguard while parking.

Higgs noted how annoyed the American was with his performance behind the wheel. Kinch didn't want to make mistakes. Nor would his fellow students let him get away with them without a good deal of good-natured mocking. The suggestion, after he'd damaged five aircraft in accidents at the ETPS, that he could add "peacetime ace" to his tally in Korea, stung badly. "You'd have been washed out of the RAF" ribbed one of the students in the bar.³ But Kinch had been unlucky. Even his instructors agreed that the prangs were no reflection of his ability.



ABOVE A group photograph of ETPS Course No 13 at Farnborough. Higgs is in the fourth row, fourth from left, and Kincheloe is in the third row, right of centre, in side cap. Another familiar face is that of future Avro test pilot Tony Blackman, fourth from left in the second row. **B BELOW** The all-American "Kinch" in service dress uniform. NASA

Kinch was tall, blond, good-looking and blessed with a larger-than-life personality, but it was his brilliance in the air that really impressed his classmates. He could, recalled Higgs, have graduated top of the whole class if he'd bothered. If success had been down solely to aptitude for flying, he would indeed have done so. Higgs's teasing notwithstanding, Kincheloe had worked hard on the academic side of the course — it just didn't quite match the flying. Still, top three wasn't bad.

By the end of the year the graduates of No 13 Course all had their next assignments. And in respect of these, after the spartan homogeneity of Farnborough, what Kinch and Higgs had to look forward to couldn't have offered more of a contrast.

FLIGHT-TEST HEAVEN

Kincheloe was on his way to the USAF Flight Test Center at Edwards, while Higgs would be staying at Farnborough to join the RAE's Experimental Flying Department. On paper, there was a direct equivalence in what awaited the two freshly minted young test pilots. Edwards and Farnborough were — alongside the US Navy's Naval Air Test Center at Patuxent River — the pre-eminent flight test establishments in the world. By 1955, however, and despite some appearances to the contrary,

the Americans were beginning to pull away.

The exchange programme between the USA and the UK sent pilots in both directions across the Atlantic. An early beneficiary of this was highly experienced British naval test pilot Capt Eric M. Brown. After the Second World War, following a baptism of fire tangling with Messerschmitts over the Norwegian fjords in a Blackburn Skua and combat over the Atlantic in Grumman Martlets with No 802 Sqn off the escort carrier HMS Audacity, the Scot, nicknamed "Winkle" because of his modest stature, embarked on a career that would establish him as the country's most experienced and accomplished test pilot.

In July 1951, after arriving on exchange at Patuxent River, Brown broke the sound barrier during his very first flight in an F-86 Sabre. It was a painful reminder of the ground ceded by Britain in the years since the end of the war. Before 1947, Brown believed, Britain was totally competitive; until Chuck Yeager broke the sound barrier in the skies over Mojave in the Bell X-1.⁴ Winkle Brown was in a position to know. Before the advent of the X-1, by means of his unauthorised powered flight in the Messerschmitt Me 163 Komet in 1945, he was the only Allied pilot to have flown a rocket-powered aircraft. In 1946 he was scheduled to fly the UK's Miles M.52 through the sound





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ABOVE Bell X-2 serial 46-674 at Edwards Air Force Base in California. Although the first sequentially of the two built, it was actually completed after 46-675, and was the example in which Kincheloe made his first flight in the type in May 1956, when he reached a comparatively sedate Mach 1.14 at 46,000ft (14,000m).

RIGHT Kinch (far right) poses with Edwards Flight Test Director Col Horace Hanes (centre) and fellow X-2 pilot Capt Milburn "Mel" Apt, who would be killed a matter of days later when X-2 46-674 suffered inertia-coupling during a flight and the ejection capsule malfunctioned.

barrier a year earlier than Yeager. Construction of the bullet-shaped experimental jet was some 80 per cent complete when the programme was peremptorily cancelled and the research material handed over to the Americans.

During his time on exchange in the USA Brown became close to Bill Bridgeman, Marion Carl and Scott Crossfield, the pilots pushing the US Navy's Douglas D-558-2 Skyrocket towards speeds of Mach 2 and altitudes above 80,000ft (24,000m) at Edwards.

These were the kinds of machines that Iven Kincheloe had set his heart on. He wasted no time in trying to stake his claim. With Chuck Yeager posted from Edwards to command a front-line fighter squadron in Germany, Pete Everest, whom Kinch had first impressed while trying to win a place at test pilot school, became the USAF's senior rocket aircraft test pilot. While the Navy poured its efforts into the Skyrocket, the USAF fielded the Bell X-2, designed to fly at three times the speed of sound and at heights of up to 135,000ft (41,000m).

Kinch reacquainted himself with Everest and in turn, Everest continued his support for a pilot who was near-desperate to make his mark, steering him towards test flights in the USA's



NASA

new "Century Series" of fighters: McDonnell's F-101 Voodoo; Convair's F-102 Delta Dagger; Lockheed's F-104 Starfighter and Republic's F-105 Thunderchief, all of which were at Edwards for thorough evaluation before entering squadron service.

But Kincheloe only had eyes for the rocket-powered X-2. He studied test reports, interrogated engineers, technicians and scientists and joined the Institute of Aeronautical Sciences, American Rocket Society, American Society of Mechanical Engineers, Air Force Association and Society of Experimental Test Pilots (SETP). "It just plain looks good," he told a colleague, "like having a bunch of degrees".⁵ Characteristically, he built himself a scale model of the Bell X-1 out of debris culled from the crash site of one of the X-1 series of aircraft, and, just to prompt

With its two-chamber Curtiss-Wright XLR25 rocket motor ignited, X-2 46-674 leaves the Boeing B-50 mothership and F-86 chase aircraft behind at the beginning of one of its 13 powered flights between November 1955 and late September 1956.



conversations about rocket aircraft, placed it on his desk. By November 1955 he was flying chase for Everest's first powered flight in the X-2.

While Kinch pressed his case in the California High Desert, Geoff Higgs was assigned to the troublesome Westland Wyvern, the Royal Navy's new turboprop strike fighter. That catapult launches seemed to be resulting in engine flameouts rendered the Wyvern, as Higgs observed with customary understatement, "less than useful in its role". The aeroplane was, in his estimation, "a nasty".⁶ But it was also symbolic of a British aviation industry that was struggling to find its way.

It wasn't that the country's designers, engineers and pilots were incapable of the imagination, innovation and accomplishment of their American counterparts; but, hamstrung by structural inefficiency, capricious political decisions, conservatism from service chiefs and starved of funding in a period of post-war austerity, the industry's notable successes were, more often than not, exceptions that proved the rule. In 1953 Britain had established new world altitude and speed records with the English Electric Canberra and Supermarine Swift. The following year the supersonic English Electric P.1, a modified version of which would go into production for the RAF as the Lightning fighter, flew for the first time. So too did the Fairey Delta 2 research aircraft which, a year later, would raise the official world airspeed record well beyond 1,000 m.p.h. (1,609km/h).

All these achievements were rightly celebrated, but they were against the run of play. And that word "official" is important. Neither the Swift nor Fairey's beautifully elegant Delta 2 were the fastest aeroplanes in the world. Nor

was the Canberra the highest-flying. All three records had been set because they conformed to the rules set out by the *Fédération Aéronautique Internationale*, the Paris-based governing body which decided on the criteria for such records. Blisteringly fast American rocket-powered aircraft launched at altitude from the bellies of carrier aircraft did not.

"DROP IT!"

In May 1956 Kinch finally got his ride in the X-2. The USAF posted Everest from Edwards to the front line, and, when asked who he thought should replace him in the cockpit of the X-2, Everest immediately put Kincheloe's name forward. After alighting on the dry lakebed following his first flight in the X-2 on May 25, Kinch described it as "the greatest flight of my life".⁷ In reality, that was still to come.

On September 7, 1956, as a Boeing B-50 climbed out of Edwards, Kinch got up from his jumpseat between the pilots in the cockpit and made his way aft. He pulled on his parachute, gloves and sealed his helmet, before squeezing through a hatch into the bomb bay and down a ladder towards the waiting X-2. As he lowered himself into the cockpit he was followed into the bomb bay by a USAF flight engineer and his assistant, who fastened his straps and connected his pressure suit and intercom to the aircraft. The B-50 continued to drone on westwards, clawing its way to an altitude of 30,000ft (9,000m) while Kinch worked his way through the long pre-flight checklist.

"Minute and a half to drop" came word from the mothership's cockpit. "Roger", Kinch replied. The B-50's captain lowered the aircraft's nose into a shallow dive and, as he called out



ABOVE For some time before the end of the X-2 programme, plans had been in place for the development of an even more extraordinary aircraft for hypersonic and very-high-altitude research; the result being North American's remarkable X-15, three examples of which were built. Seen here is the first, 56-6670, on the lakebed at Edwards.

the airspeeds, removed the safety pin from the launch handle.

"Ready to drop, roger. Airspeed two-sixty. Start your countdown, Kinch."

"Five . . . four . . . three . . . two . . . one . . . drop it!" At 0915hr the X-2 fell from beneath the bomber. Kinch advanced the throttle to the stops. In quick succession the aircraft's two rocket motors fired. Seconds later the machine passed Mach 1, still accelerating hard. Kinch kept the nose high as he speared through 45,000ft (13,700m), scanning his instruments and reporting his observations of the X-2's flight characteristics. Then, 133sec after the engines had fired, their liquid-oxygen/alcohol fuel was spent. Kinch was still climbing fast, beyond 100,000ft (30,500m). As the aircraft's ballistic trajectory topped out at over 126,000ft (38,000m) he could see the curvature of the earth and the deep indigo of the sky beyond the soft-edged blue of the lower atmosphere.⁸ It was higher than any human being had ever been, thus making Kinch, in both the headlines and the minds of the public, "America's first spaceman".

The truth was that this was somewhat wide of the mark. In the mid-1950s Hungarian scientist Theodore von Kármán had successfully proposed that the boundary between aeronautic and astronautic flight be set at an altitude of 100km. On this basis, Kinch would have had

to pass a height of 328,000ft in order to qualify officially as an astronaut — an altitude well beyond even the X-2. Fortunately, a year before Kincheloe's record-setting flight, work had begun on a new rocket-powered aircraft that was being designed to ascend to the "Kármán line" and beyond — the North American X-15. In late 1957 the USAF named Kinch as the new aircraft's project test pilot. But he never got the chance to fly it.

OUT OF THIS WORLD

After six months of training in the X-15 simulator, enduring punishing high-g runs in the centrifuge, and as a passenger aboard aircraft flying precise parabolic arcs to replicate the weightlessness of space, Kinch finally set eyes on the nearly completed rocket aircraft, painted semi-gloss black, at North American's plant at Downey in south-east Los Angeles. "Out of this world", he pronounced.⁹

Two months later Kinch was dead; killed when he was too low for his parachute to open after ejecting from an F-104 that had suffered engine failure on take-off. Captain Iven Carl Kincheloe — "America's No 1 Spaceman" — was buried at Arlington National Cemetery in Virginia. His name, however, would live on. Each year, the Iven C. Kincheloe Award is presented for outstanding professional accomplishment in



ABOVE On its introduction into service in the summer of 1957, the Supermarine Scimitar became the largest, heaviest and most powerful fighter the Fleet Air Arm had acquired up to that time. Its twin Rolls-Royce Avon engines of some 10,000lb-thrust each also made it the noisiest. Seen here is first production Scimitar F.1 XD212.

the conduct of flight testing by the Society of Experimental Test Pilots, one of the organisations Kinch had joined in his efforts to burnish his credentials as a candidate to fly the X-2.

Geoff Higgs, who had followed Kinch's progress from afar, was told informally about his Course No 13 classmate's death through a note from the ETPS. At the time, Higgs was hard at work introducing into service the Royal Navy's latest jet, the Supermarine Scimitar, but he greeted news of Kincheloe's death with real sadness. He had only fond memories of his brilliant contemporary. But he also recognised that they were both flying in an era where pilots "went west" with alarming frequency. And nowhere more quickly than in the Fleet Air Arm.

Losing friends was a fact of life, and the Scimitar was certainly as capable of killing pilots as the Starfighter. On paper, the Scimitar had thrust to spare — indeed, it boasted a similar thrust-to-weight ratio to the Starfighter. But it expended too much of it trying to push a thick-winged high-drag airframe through the sky. Only the Brits, Americans "admiring" the Scimitar would observe, could make an aircraft that powerful so resolutely subsonic.

The technology gap between the USA and the UK was widening. Faced with a real spaceship like the X-15, the British aviation industry could offer little more than draughtsmen's sketches

and projected performance figures in return.

From its factory on the Isle of Wight, Saunders-Roe (Saro), which had built and flown the mixed-power SR.53, incorporating both a jet and a rocket engine, was proposing further developments of its small white delta-winged aeroplane. If, the Saro design team calculated, the jet engine was replaced with another rocket, and more fuel was added, and if it was launched at 40,000ft (12,200m) from the back of a Vickers Valiant bomber, then speeds of Mach 4 and altitudes above 300,000ft (91,000m) should be attainable. The company produced blueprints of the SR.53 plumbed with a reaction-control system — puffer jets — that would allow the pilot to control the aircraft at altitudes at which traditional flight controls would be completely ineffective. The idea was not adopted, however.

At Avro's Weapons Research Division at Woodford, engineers suggested a piloted version of its *Blue Steel* nuclear stand-off missile, designated Z.101. Capable, the boffins claimed, of reaching Mach 5 and 300,000ft, Avro's lethal-sounding machine was enough to alarm even the normally imperturbable Winkle Brown. He, in any case, had been made a better offer.

In 1960 Brown's friend Scott Crossfield was the recipient of the Iven C. Kincheloe Award for his pioneering work on the X-15. The aircraft's potential had not gone unnoticed

During the summer of 1964 the Blackburn Buccaneer S.2 prototype XK526 was used extensively for "Minimum Launching Trials" at the Royal Aircraft Establishment at Bedford. Geoff Higgs, soon to become head of the A&AEE's Naval Test Squadron, made a catapult take-off from the dummy deck at Bedford on August 25, 1964.

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across the Atlantic in the corridors of the Royal Aircraft Establishment. Faced with the UK's unwillingness or inability to support similarly high-performance flight research, Brown's boss at the RAE, Morien Morgan, chair of the Supersonic Transport Aircraft Committee that in 1959 recommended Britain build a supersonic airliner, made a suggestion to Brown. He suggested that Winkle ask the Americans if he could fly the X-15. It was a request that Morgan felt he could not make officially.

"I can't do it", he told his test pilot. "I'd like you to try because I think they might pick you up on it. And we would be more than interested". Until that point, the possibility had never even occurred to Brown, but, his interest stirred, he didn't hesitate. And while a semi-official request was made by Brown to the powers-that-be, he also contacted Scott Crossfield directly in the autumn of 1960.

"I'll get back to you", Crossfield told him, telling him that he thought Neil Armstrong, then still a relatively new recruit to the small cadre of X-15 pilots, would be likely to support the request. Crossfield certainly got that right. Armstrong, it transpired, had regarded Eric as a role model for a decade.

When the answer came back it was good news and bad news. Brown's application would be favourably received, but only on the condition that he became an American citizen. It was not something he was prepared to do. And with that decision, any hopes that the Scot might become Britain's first astronaut were dashed.¹⁰

MEANWHILE...

Things, however, were looking up for Geoff Higgs. In 1965 he was given command of the Naval Test Squadron at the Aeroplane

& Armament Experimental Establishment (A&AEE) at Boscombe Down, a position he regarded as the most sought-after flying job in the Royal Navy. That summer, Higgs was selected to lead a flight of Blackburn Buccaneer S.2s across the Atlantic, via Keflavik in Iceland and Goose Bay to Patuxent River in Maryland, for catapult trials. The first two Buccaneers departed on July 23, 1965, with the third following three weeks later.

Tropical trials in the Caribbean aboard the *USS Lexington* followed, the three Buccaneers operating from the wooden-decked carrier for four days, during which 100 take-offs were made, equivalent to some 115hr of low-level flying in hot and turbulent conditions. Higgs returned to Boscombe Down in XN976 on August 30–31, leaving Lt-Cdr A. Taylor to run the show for the remaining trials.

Before departing for the UK, however, Higgs was given the opportunity to fly the US Navy's Grumman A-6 Intruder, arguably the most direct American equivalent of the Buccaneer. While it was robust and well-equipped, it left him cold. It was clumsy, he concluded; heavy on the stick and with none of the low-level acceleration of the British aircraft. It made him realise what a prize the Fleet Air Arm had in the Buccaneer. When he was asked whether, at the end of the trials, he'd be prepared to allow the Buccaneers to be taken to Edwards to let USAF test pilots and engineers have a look at the beefy British jet, he was only too happy to accept the invitation and made plans to return to the USA.¹¹

While Taylor was impressing USAF personnel with rock-steady rides at Mach 0.9 just 10ft (3m) above the desert floor in late September, Higgs was given the opportunity to do something even more fun . . .



LEFT Geoff Higgs in the front seat of one of the three Buccaneer S.2s sent to the USA for trials aboard the USS Lexington in 1965. On October 4 that year Higgs and Lt-Cdr A. Taylor returned to the UK in S.2 XN974, flying from Goose Bay to Lossiemouth without refuelling to complete the first non-stop crossing of the Atlantic by an FAA aircraft.

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BELOW Missile with two men in it — F-104B 57-1301, the two-seat Starfighter in which Geoff Higgs flew in the back seat for his X-15 chase flight on September 28, 1965.

At Edwards, Higgs met Chuck Yeager, by this time back in California after his stint in Europe. America's most famous test pilot was Commandant of the Aerospace Research Pilot School, formed from the USAF's Experimental Flight Test Pilot School in October 1961 to train Air Force candidates with "The Right Stuff" not just how to be test pilots but also astronauts. The syllabus included rocketry, celestial navigation, aerothermodynamics and orbital mechanics. The students "flew" the school's GPS T-27 Spaceflight Simulator (designed by Link), practising orbital manoeuvring and rendezvous in space.

A CHANCE OF A LIFETIME

Yeager and Higgs talked about Kinch, who had once owned Yeager's old Model A Ford, passed on to him by Pete Everest, who'd inherited it from Yeager himself when he took his place as the USAF's top rocket man. As he was waiting in the crew room one day, Higgs was told he had

been left a note. Would he, it asked, like a flight in an F-104 flying chase for the next day's launch of the X-15, the aircraft in which Kinch should have earned his astronaut's wings?

Thus it was that on September 28, 1965, Higgs was sitting with pilot Bruce A. Peterson at a pre-flight briefing at NASA's Dryden Flight Research Center at the north-east corner of Edwards. They were to fly *Chase Two* in two-seat F-104B serial 57-1301, and would be sitting off the starboard wing of the NB-52 carrying the hypersonic rocket aircraft. In *Chase One* was Bob Rushworth, another X-15 astronaut, flying a Northrop T-38. Fred Haise, who would later earn fame as one of the crew of Apollo 13, had the role of roving chase. And in *Chase Four* was Joe Engle, who, three months earlier, had also qualified as an astronaut in the X-15 — in which he had performed an unauthorised barrel-roll on his first flight in the type in October 1963.

Flying the X-15 was John B. "Jack" McKay, a bulldog of a man who had survived a crash in



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the X-15 three years earlier that had left him with brain, lung and spinal-cord damage. Despite considerable and enduring pain he had returned to the programme and, if all went without a hitch, this mission would take him to the threshold of space.

The NB-52 took off carrying McKay in the X-15 at 0924hr, accompanied by Rushworth in the T-38. The F-104s, less able to hold station with the slower bomber as it climbed to height, followed later, climbing to join *Balls Three* at 45,000ft (13,700m) as it approached Delamar Dry Lake, 100 miles (160km) north of Las Vegas, for the launch.

"We've got about five minutes to go", Peterson told his passenger from the front seat of the Starfighter. With the F-104 forming off the



ABOVE With the rocket powerplant yet to be ignited, the first X-15, 56-6670, is launched from the NB-52 mothership early in the test programme. Three X-15s were built, the others being '671 and '672, the latter being the example in which John McKay (seen at LEFT with the aircraft) reached Mach 5.33 and an altitude of 295,600ft (90,100m) on September 28, 1965, with Geoff Higgs observing in an F-104B. NASA x2

starboard quarter, Higgs couldn't take his eyes off the big mothership and its cargo. Sections of the X-15's dark metal skin were frosted white from the cold of the liquid oxygen in its tanks. Over an open channel, he listened in to the pre-flight checks. Then the countdown began.

From the cockpit of *Balls Three*, Capt Charles C. Bock Jr counted down: "Ten . . . nine . . . eight . . . seven . . . six . . ." Higgs watched intently, determined to capture every second. "Five . . . four . . . three . . . two . . . one . . . drop!" Higgs simply wasn't ready for how quickly everything happened. As the black aircraft dropped away, its Reaction Motors XLR99 engine fired into life and, with astonishing acceleration, the X-15 climbed away. Like a scalded cat, thought Higgs, not sure he'd seen anything but its back end streaming white exhaust. It simply disappeared. Within 8sec it was out of sight, leaping away from the formation like a firework from a milk bottle. It felt like milliseconds to the watching Englishman. "Shall we go shoot some landings at Vegas?", Peterson asked him.¹²

In 1974, operating out of RAF Tengah in Singapore, Geoff Higgs was deliberately flying a McDonnell Douglas F-4 Phantom at supersonic



HIGGS FAMILY ARCHIVE

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See also Geoffrey Higgs's memoir *Frontline and Experimental Flying with the Fleet Air Arm* (Pen & Sword, 2010)

LEFT Geoff Higgs beside the F-4 Phantom in which he deliberately flew into raging thunderstorms in 1974 while participating in Operation Da Yu, a series of flight trials in Singapore to evaluate rain-erosion for the Concorde test programme, a task he likened to "taking the family saloon at high speed over a tank range".

speeds into the largest thunderstorms he could find for as long he could. It was uncomfortable, intense and difficult, but he found it exhilarating. He wasn't sure it was quite as much fun for the jet. So savage and brutal was the battering to which it was being subjected that he wondered how much more it could take.¹³ Higgs was conducting rain-erosion trials in support of the Anglo-French Concorde programme.

After his return to the UK following the successful conclusion of the trials, he soon left home again bound for California to attend the biennial meeting of the SETP in Los Angeles. It was, as usual, a lavish affair. Acting as master of ceremonies for the four-day symposium was America's first astronaut, Alan Shepard. On day three, rocket pioneer Wernher von Braun spoke, and at dinner on the final evening, Higgs found himself seated at a table hosted by the man who had replaced Shepard as NASA's Chief Astronaut, John Young, who seemed keener to talk about his time as a naval test pilot than his adventures in space.

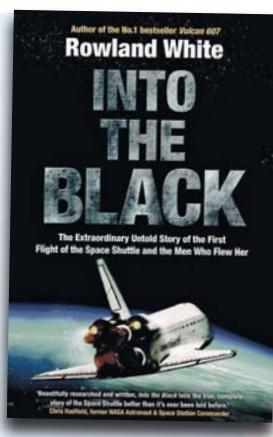
A FITTING TRIBUTE

During dinner, several awards were made, but none meant more to Higgs than that to which his fellow ETPS graduate Iven Kincheloe lent his name. Since the award's inception in 1958, three X-15 pilots had won it and 17 NASA astronauts, including John Young for the Apollo 16 mission that saw him walk on the moon. Throughout its 16-year history it had been awarded just once to non-American test pilots when, in 1971, it was

presented to Brian Trubshaw and André Turcat for their work on Concorde. It was a powerful reminder that the bonds between test pilots on both sides of the Atlantic remained as strong as ever, even if the opportunities afforded to each did not. But after a 30-year flying career that had seen him fly nearly 100 different aircraft types and complete around 1,000 carrier landings Geoff Higgs had no regrets. His success was all, he maintained, "purely by chance".¹⁴ There are no doubt plenty who would disagree.

■ This feature is dedicated to the memory of two exceptional British aviators: Cdr Geoffrey R. Higgs, September 25, 1925–December 8, 2015, and Capt Eric M. Brown, January 21, 1919–February 21, 2016

BEST-SELLING AUTHOR
Rowland White's latest book, *Into The Black* (Bantam Press, ISBN 978-0-59306-436-8, RRP £18.99), uses brand new interviews, archive material and newly declassified documents to tell the nail-biting story of the first flight of the Space Shuttle in April 1981, and the remarkable team that developed and flew it. For more information visit www.rowlandwhite.com



THE MAGNIFICENT

7



In 1951 Italian aircraft manufacturer SAI Ambrosini sent a couple of examples of its latest tourer/trainer, the sleek S.7, to participate in that year's British air-racing season. The following year the company also sent an improved version, the even more shapely Superset. **NICK STROUD** traces the history of the two types and takes a look at some contemporary flying reports to find out what the elegant pair were like to fly . . .



In 1952 Ambrosini fielded an example each of the S.7 and Supersette to bid for the various trophies up for grabs in that year's British air-racing season. Here Guidantonio Ferrari waits for the starter's flag to drop before getting S.7 I-BOZI away as the last aircraft in the Daily Express race at Shoreham on August 2. Ferrari romped home in second place at an average speed of 230 m.p.h. (370km/h).



“WHAT BETTER WAY could there be of starting a week than to drive to Redhill bright and early on a Monday morning, and from there to climb South Coastwards in a lively and responsive single-seater?" Thus Maurice A. Smith, the Editor of *Flight*, began his feature on the sleek Ambrosini S.7 in the August 24, 1951, issue of the weekly journal. Two examples of the nimble trainer-cum-tourer were brought to the UK in the summer of 1951 to participate in the weather-blighted Festival of Britain races at Hatfield in June and the *Daily Express* South Coast Air Race held at Shoreham later the same year. With their precision-engineered Alfa Romeo engines and graceful fighter-like looks, the pair certainly turned heads at Hatfield, giving the locals a taste of "*La Dolce Vita*" in comparison to the comparatively staid British fare on show. A development of the S.7, the Super 7 — or Supersette as it was known in Italy — was brought to the UK the following year, and made an equally charming impression on the gentlemen of the press.

BACK TO THE BEGINNING

In 1934 the Ambrosini industrial group absorbed the *Societa Aeronautica Italiana* (SAI) based at Passignano sul Trasimeno, some 12 miles northwest of Perugia, Umbria, and set about building

light touring and racing aircraft, initially under the direction of designer Ing Camillo Silva and later Ing Sergio Stefanutti. The latter was a serving Regia Aeronautica (RA) engineering officer in the mid-1930s and came into contact with the company when the RA selected SAI Ambrosini to build his privately-developed SS.4 canard fighter prototype, which made its first flight on March 7, 1939.

Stefanutti's next design, the sleek SAI.7, showed a great deal of promise on its first flight in July 1939, the streamlined new racer being fitted with special glazed fairings which extended from the nose to the canopy in order to reduce aerodynamic drag. With a retractable undercarriage, exceptionally clean lines and a 280 h.p. Hirth HM.508D eight-cylinder inverted air-cooled engine, the type was originally built for the prestigious Fourth International Avio Raduno del Littorio race for touring aircraft, the first two examples making their first flights just a matter of days before the opening of the competition at Rimini on July 15, 1939.

Although neither prototype claimed the trophy, Giorgio Parodi took SAI.7 I-DINF to second place at an average speed of 230 m.p.h. (370km/h), actually some 35 m.p.h. (56km/h) faster than the winning Messerschmitt Bf 108. The SAI.7's extremely promising performance impressed the Italian authorities, an impression which was further enhanced when one of the

OPPOSITE PAGE, MAIN IMAGE Aviation journalist Derek Dempster at the controls of the Ambrosini Supersette I-PAIN in 1952. **OPPOSITE PAGE, TOP** Cartoonist E.A. "Chris" Wren's impression of Italian pilot Guidantonio Ferrari and the S.7 jockeying for position in the 1952 Daily Express International Handicap Challenge Trophy.



ABOVE One of the 13 SAI.207s completed before production of the type ceased owing to the Italian armistice in September 1943. Powered by an Isotta-Fraschini Delta RC.40 engine, the SAI.207 had a span of 9.0m (29ft 6½in), a length of 8.0m (26ft 4in) and a height of 2.9m (9ft 5in). Wing area of the promising fighter was 13.9m² (149.6ft²).

SAI.7s set a new world air speed record of 244 m.p.h. (393km/h) for a 100km (62-mile) closed circuit on August 27, 1939.

With the outbreak of the Second World War Stefanutti (**INSET RIGHT**) saw an opportunity to develop the shapely wooden tourer into a two-seat advanced trainer. A long-held myth has persisted that this was an attempt to develop a high-performance aircraft without having to draw on the nation's precious stockpile of strategic materials, but, as Italian aviation historian Gregory Alegi explains: "In fact, wood could be considered more of a strategic material than aluminium in Italy at that time, as the nation produced very few trees that could yield aircraft-grade wood. Italy also had limited access to high-quality alloying materials—molybdenum etc—but never lacked aluminium". He continues: "Ambrosini was well-versed in wood construction, however, which enabled the company to avoid major investment in tools and retraining of its technicians. Ambrosini and Stefanutti later adopted the non-strategic-material story as semi-official history."

Accordingly the designer set to work redesigning the SAI.7 as a fast fighter trainer, with the first militarised example, powered by a somewhat unreliable 280 h.p. Isotta-Fraschini Beta RC.10 inverted-vee engine, making its

first flight in 1941. Despite largely favourable reports from Regia Aeronautica test pilots, who were impressed with the trainer's 250 m.p.h. (400km/h) top speed, only ten examples were built, mainly owing to the substantial redesign work required and the company's limited engineering capabilities.

At the same time, Stefanutti developed an experimental single-seat fighter version of the SAI.7, the SAI.107, which was powered by a 540 h.p. Isotta-Fraschini Gamma RC.35IS inverted-vee engine driving a two-bladed propeller. This extremely manoeuvrable lightweight prototype—a mere 2,000lb (905kg) fully loaded—was first flown in the summer of 1940 (it crashed the following year, killing Italian pioneer aviator Arturo Ferrarin), paving the way for an armed version, the SAI.207, which was fitted with a pair of 20mm cannon alongside two 0.5in machine-guns. With the powerful 750 h.p. Isotta-Fraschini Delta RC.40 engine driving a three-bladed propeller, the new aircraft weighed in at 4,993lb (2,265kg), and reportedly attained an indicated air speed (IAS) of 466 m.p.h. (750km/h) at 10,000ft (3,050m) in a dive during trials. The 207's typical level speed was reportedly a still-impressive 355 m.p.h. (570km/h), the type also boasting a useful range of more than 520 miles (835km). However,





ABOVE Flight Editor Maurice Smith positions S.7 I-EFFE, wearing race number 92, in front of a backdrop of picturesque clouds while up from Redhill in August 1951. Smith remarked: "To a sports-car enthusiast, the knowledge that the S.7 has an Alfa Romeo engine under its tight cowlings added zest to the occasion".

as Gregory Alegi points out, "this quoted performance may be seen as rather misleading, as this high speed was achieved by cutting wing area — in true racer style — but at the expense of everything else", including climb performance, range, service ceiling and ability to carry a meaningful armament load.

Only 13 SAI.207s were completed, three of which were sent to the 3° Stormo Caccia Terrestre for operational trials in July 1943. Within weeks, the Italians secured an armistice with the Allies and production was stopped.

The final military legacy of the S.7 was the SAI.403 Dardo (dart or arrow), designed by Camillo Silva after a falling-out between Stefanutti and Angelo Ambrosini. The 403 was similar to the SAI.207 except for the provision of a retractable tailwheel, a revised variable-incidence tailplane and increased wing area. The Dardo made its maiden flight in late 1942 or early 1943 (sources vary), and the SAI.207 order was superseded by a production order for 403s. It was not to be, however, as development and production was abandoned following the armistice. [Gregory Alegi's full account of the wartime Ambrosinis is coming soon — Ed.]

A NEW LEASE OF LIFE?

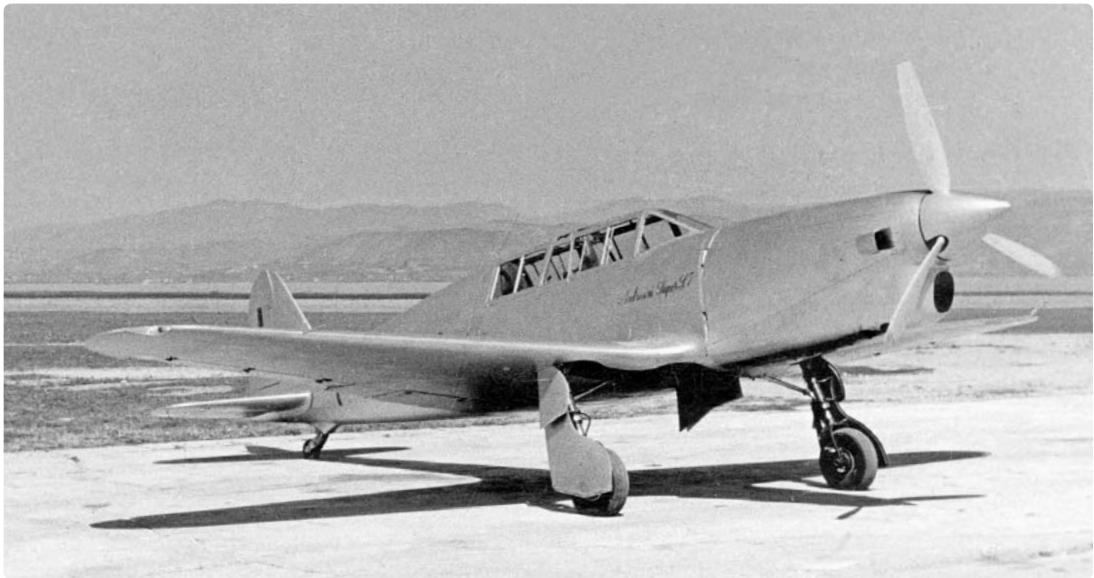
Ambrosini resumed activity, with Stefanutti back in the fold, in 1946, the adaptable SAI.7 design continuing to reap benefits for the company as the basic blueprint for a proposed new generation of Italian jet fighters, including the

Aerfer Ariete and Ambrosini's Sagittario of 1953.

In 1949 the S.7 trainer was introduced, loosely based on the earlier Ambrosini design, but with a number of differences — the most significant of which was the replacement of the Isotta-Fraschini engine with an Alfa Romeo 115 six-cylinder air-cooled inline inverted engine, essentially a licence-built de Havilland Gipsy Six. In total, 145 S.7s were built, most in a two-seat configuration, but some as single-seaters, both variants being operated by flight training centres of the Aeronautica Militare (AM) until their retirement in 1956.

During 1949–50 a new design, albeit with a very strong family resemblance, was introduced as the Supersette (Super 7). The new two-seater was built with a number of improvements including an upgraded powerplant — either a 380 h.p. Alfa Romeo 121 eight-cylinder engine or a de Havilland Gipsy Queen 70 of equal power, driving a three-bladed constant-speed propeller — plus the addition of modern navigation aids, provision for carrying bombs and camera equipment and a 7·7mm machine-gun. A photograph of one of the two Supersette prototypes was published in the July 4, 1952, issue of *Flight* with wing racks and bombs.

The Supersette had been developed to an Italian Ministry of Defence Specification for a two-seat advanced trainer with a 20,000ft (6,100m) service ceiling, a stalling speed of around 75 m.p.h. (120km/h), a 4½hr endurance, full blind-flying aids and a machine-gun plus



ABOVE Only two Ambrosini Supersettes were built, one of which is seen here shortly after its completion at the company's factory in Umbria. Although externally very similar to its S.7 forerunner, the Supersetте had wings of greater span and was fitted with a more powerful de Havilland Gipsy Queen 70 engine and three-bladed prop.

rocket armament. Italian manufacturers Macchi, Fiat and Piaggio received development contracts for the MB.323, G.49 and P.150 respectively, all powered by radial engines of 500–600 h.p.

Ambrosini saw an opportunity to develop a machine that could take pupil pilots through from the primary training stage to the jet operational training unit with one type, thus making the training programme cheaper and more streamlined. The company decided to develop the Supersette as a private venture, to provide an aircraft that could behave more like a contemporary jet aircraft than any other piston-engined machine then available.

Although a batch of ten Supersettes was put into production, only two were completed. The first, fitted with a Gipsy Queen 70/3, was registered I-RAIN, the Italian equivalent of a B Conditions marking, before being put on the

civil register as I-PAIN. The other prototype was given the military serial MM.558 and fitted with the rather more troublesome Alfa Romeo 121 engine. Both have survived, I-PAIN now being resident at the Museo Nazionale Scienza e Tecnologia Leonardo Da Vinci in Milan, and MM.558 at the Italian Air Force Museum at Vigna di Valle.

In the summer of 1951 Ambrosini sent two civil-registered Alfa Romeo 115-powered single-seat S.7s, I-EFFE and I-BOZI, to the UK to participate in the various air races being held during Festival of Britain year. The first of these was the ill-starred Festival Air Races at Hatfield, to be held on June 23, 1951, which were predictably rained off — it was summer in England after all — as was the *Daily Express* South Coast Air Race scheduled to be held at Shoreham in August.

Count Leonardo Bonzi's S.7 I-BOZI attracts the attention of a pair of lads at the reconvened Daily Express air race at Shoreham in September 1951. Both S.7s participated in the race, with Ferrari flying I-EFFE with race number 92 and Bonzi flying I-BOZI with race number 98. MIKE HOOKS





ABOVE With the swing-over canopies for the cockpit and rear compartment open, S.7 I-EFFE is pushed out of the hangar at Redhill in preparation for Maurice Smith's flight in August 1951. In the background is Miles Gemini G-AGUS, fitted with Continental engines. Smith stated that a Miles Aries was used for the air-to-air photography.

The latter was restaged at the South Coast airfield on September 22, 1951, with Dr Ing Guidantonio Ferrari in I-EFFE (Race No 92) and Count Leonardo Bonzi in I-BOZI (Race No 98) being among the 63 competitors officially registered to participate. The course ran from Shoreham along the coast to Newhaven, then a cross-country leg to a right-hand turn at Herne Bay Pier before a dash home around the coastline past Dover and Folkestone to the finish at the West Pier in Brighton. After a thrilling race, Bonzi managed to place 35th, although Ferrari apparently either didn't fly at all or was not placed. Ferrari did, however, win the 1,000-mile (1,610km) Grand Prix Air Race at Bari shortly afterwards at an average speed of 204.5 m.p.h. (329 km/h).

Another highlight in that year's campaign to showcase the high-speed qualities of the sleek S.7 was Bonzi's successful attempt to set a new 100km closed-circuit speed record, which he did on December 21, flying I-BOZI (by this time equipped with a de Havilland Gipsy Queen 30 engine) round the circuit at an average speed of 223 m.p.h. (358.64km/h).

FLYING THE "BABY MUSTANG"

It was just before the S.7's showing at Shoreham in September 1951 that Maurice Smith got his chance to fly the shapely racer from Redhill. Powered by an Alfa-Romeo 115, S.7 I-EFFE was made available at the picturesque Surrey airfield for a full flight-test, the machine being accompanied by Ferrari. Smith was impressed with the S.7 from the off, its clean appearance making an excellent first impression.

Smith explained: "One reason for the machine's complete freedom from dirt and oil is the provision of a tiny tank, bulkhead-mounted, at the delivery end of the breather pipe. Oil can thus be drained away on the ground instead of blowing back over the underside of the fuselage, there to collect flies and dirt. This was one of many unusual gadgets and fitments on the S.7". He also revealed that "of the few British pilots who have been lucky enough to fly the aircraft, one at least has aptly described it as a 'baby Mustang'". So what was it like to fly?

Smith had little trouble starting the Alfa Romeo engine, finding it a simple and smooth procedure, although the S.7's long nose gave cause for a little concern during taxiing:

"Visibility ahead is negligible. However, the engine is slender, and a little nose-swinging from side to side enables the pilot to see plenty for safe taxiing."

He continued: "It feels most unnatural to stuff the stick forward and open the throttle in order to taxi in such an aircraft — but that is the way it is done on the Ambrosini — another case of a machine which looks nose-heavy on the ground, but which in fact is not". Smith found the layout of the flight instruments rather "elaborate and confusing", explaining that there appeared to be some kind of rather incoherent colour code for the control system and that "there seems to be a certain amount of complication of controls and dials, which should be avoided in a trainer".

Taking a long run for take-off, Smith declared himself slightly uneasy with the rudder and lack of forward view, despite the machine keeping perfectly straight. He admitted to being unduly



LEFT Guidantonio Ferrari reveals the extremely accessible Alfa Romeo 115 air-cooled six-cylinder inline engine fitted in the S.7. Cooling airflow was controlled by gills and the exhausts were located on the underside of the cowling and offset slightly to starboard. Smith found the Alfa easy to start, remarking that "it's a case of prime, switch-on and press . . ."

RIGHT Ferrari in the cockpit of I-EFFE in the summer of 1951. The Italian had been made an honorary member of "The Throttle-Benders' Union", the unofficial brotherhood of regular participants in British air races, the badge of which is seen here below the cockpit. When Ferrari won the 1,000-mile Grand Prix air race at Bari later that year he cabled fellow member Nat Somers: "Happy to advise you of my victory in the aerial 1,000 miles with the Ambrosini carrying the insignia of the Throttle-Benders!".

BETWEEN In 1952 I-BOZI wore race number 92 (the number I-EFFE had worn the previous year) for the Daily Express race. Here Ferrari gets the tail up quickly as he departs Shoreham to place second.





ABOVE Maurice Smith shows off the exquisitely clean lines of the S.7 during his August 1951 flight. Sergio Stefanutti designed the sleek trainer to be as aerodynamically efficient as possible, although it is curious that neither the S.7 nor the Superset was equipped with a retractable tailwheel, which must have increased drag.

apprehensive, stating that "because of the relatively poor acceleration, a long time seemed to elapse before we were established on the climb". Smith was quickly impressed with the aircraft's controls once he had settled into the flight, however:

"The ailerons have the crispness of a fighter rather than the lightness of, say, a [de Havilland Canada] Chipmunk, and the rate of roll is high. The elevators are of the same order, but the rudder is somewhat softer, though powerful in its effect". Having got the feel of the machine, Smith engaged in a few spins, rolls and loops, which he found extremely satisfactory. "I even made a fairly successful stab at a hesitation roll to starboard. Encouraged, one to port was attempted with speed rather too low, but this had to be abandoned halfway round with a coughing Alfa and with the nose pointing to a

nearby farmhouse instead of on the horizon; I made a mental note to brush up my aerobatics".

After a few more loops and half-rolls Smith was ready to return to Redhill, trying some "hands- and feet-off" flying on the way; "It was necessary almost at once to keep the nose straight, but wings and nose held steadily on the horizon as long as I liked to leave it . . . in terms of lateral stability the ailerons seem to be on the positive side of neutral".

Having dropped full flap progressively, Smith found the sink-rate rather high, and had to maintain full cruising power to avoid undershooting the runway: "The aircraft descends very quickly, but its attitude on the approach is rather flat". After the flare, Smith recounted, "the S.7 sits down very firmly and keeps quite straight after touchdown".

In conclusion, Smith reported that "the stick-



Smith gets a brief guided tour of the S.7's cockpit at Redhill before his test flight. Note the generous flaps, seen here in fully extended position.



LEFT The front cockpit of the two-seat Supersette, which The Aeroplane's Derek Dempster considered "neat and well thought out", although he disliked the fact that the rudder pedals could not be adjusted for length while in flight, only on the ground. Ferrari suggested this would be subject to a later modification.

BELOW One feature Dempster was extremely impressed with, however, was the retractable map table, which could be extended for use and then folded back into a slim recess in the instrument panel with a minimum of fuss.



BELOW The distinctive "petal" cowling of the Supersette comprised four separate panels which opened up to expose the engine in its entirety, making it extremely easy to work on. Ingenious design methods prevented such a close-fitting cowling from causing overheating problems — the exhaust stubs projected into venturi-type ducts which caused an artificial draught over the engine when it was running. To achieve perfect symmetry for the cowling on both sides of the fuselage, the engine was tilted 6° sideways.





Dempster shows off the Superset's graceful planform during his flight from Leavesden in August 1952, peeling away from the Percival Proctor camera aircraft. "The old saying that if an aircraft looks good it will fly well", he said, "quite definitely applies to the Superset... it has all the qualities I look for in an aeroplane - comfort, speed and manoeuvrability".

forward taxiing, the lack of forward view on the ground, the stall with practically no warning and the feel of the initial climb after take-off are all characteristics which, while they might be acceptable to a reasonably experienced pilot, are still not good in a trainer. However, they do not prevent one being left with very pleasant impressions of handling a thoroughbred".

SUPER-SEVEN UP

The following year Ambrosini sent Ferrari with the first Superset prototype, I-PAIN, to participate in the 1952 National Air Races at Newcastle-upon-Tyne. In the Kemsley Challenge Trophy race on July 11, Ferrari started tenth and, unable to make up the rather steep handicap of 11min 17sec, finished tenth, nevertheless completing the race at a very respectable average speed of 226 m.p.h. (364km/h).

Following the Newcastle race *The Aeroplane's* Derek Dempster was invited to put the racer, wearing race number 92 (as S.7 I-EFFE had the previous year), through its paces at the de Havilland Engine Co's Leavesden factory, where the aircraft had been sent for an engine and propeller change.

As Smith had with the S.7, Dempster found the Superset's cockpit "small but roomy" and opined that the canopy was rather narrow, although Ferrari explained that the intention was to replace it with a blown canopy to improve

visibility on subsequent machines. Dempster was much impressed with the thought given to making navigation easier, remarking that "the most amazing piece of navigational equipment to be found in the Superset is the map table, which is hidden snugly above the blind-flying panel, ready to be pulled out when required".

Having also noted the counter-intuitive need to hold the stick full forward while taxiing (the tailwheel castored only when the control column was held fully forward), Dempster found the take-off smooth and simple with no tendency to swing — "it was the nearest thing to a jet take-off I have experienced in a prop-driven aeroplane".

Contrary to Smith's experience of the Alfa Romeo-engined S.7, Dempster found the Superset, powered by a Gipsy Queen 70 driving a three-bladed constant-speed propeller, eager to get into the air:

"On opening the throttle to 2,800 r.p.m. the Superset leaps forward and gets airborne in not much more than 300–330yd. It picks up speed rapidly and settles down to a 900ft/min [275m/min] climb quite happily at 2,600 r.p.m."

The Superset's recent engine and propeller change resulted in the propeller blades fouling the close-fitting cowling while in coarse pitch, a temporary pitch-travel stop having to be installed, so Dempster was unable to investigate the machine's full performance. He nevertheless found it a delight to fly, getting 250 m.p.h.

SAI AMBROSINI S.7 & SUPERSETTE DATA

Powerplant

S.7 1 x 225 h.p. Alfa Romeo 115 six-cylinder air-cooled inline inverted engine driving a two-bladed propeller
 Supersette 1 x 380 h.p. de Havilland Gipsy Queen 70/3 six-cylinder air-cooled inline inverted engine driving a three-bladed constant-speed propeller

	Ambrosini S.7		Ambrosini Supersette	
Dimensions				
Span	8.8m	(28ft 9½in)	9.3m	(30ft 6in)
Length	8.2m	(26ft 9½in)	8.2m	(26ft 9½in)
Height	2.8m	(9ft 2½in)	2.8m	(9ft 2½in)
Wing area	12.8m ²	(137.8ft ²)	13.8m	(148.5ft ²)
Wing loading	107kg/m ²	(22lb/ft ²)	141.3kg/m ²	(28.9lb/ft ²)
Weights				
Empty	1,073kg	(2,365lb)	1,375kg	(3,030lb)
Useful load	302kg	(666lb)	575kg	(1,270lb)
Loaded	1,375kg	(3,031lb)	1,950kg	(4,300lb)
Performance				
Maximum speed at sea level	359km/h	(223 m.p.h.)	395km/h	(245 m.p.h.)
Cruise speed	264km/h	(164 m.p.h.)	290km/h	(180 m.p.h.)
Stall speed	115km/h	(72 m.p.h.)	128km/h	(80 m.p.h.)
Never-exceed speed (V _{ne})	596km/h	(370 m.p.h.)	625km/h	(390 m.p.h.)
Normal take-off distance	250m	(820ft)	300m	(985ft)
Normal landing distance	—		250m	(820ft)
Initial rate of climb	5.6m/sec	(1,100ft/min)	5m/sec	(985ft/min)
Service ceiling	5,240m	(17,200ft)	7,000m	(23,000ft)
Normal range	830km at 915m & 265km/h	(515 miles) (3,000ft) (165 m.p.h.)	1,100km at 290km/h	(685 miles) (180 m.p.h.)

(400km/h) out of it before the coarse-pitch stop came into play. Indeed, he found it "reluctant to slow down" owing to its aerodynamic cleanliness, but the dive brakes fitted within the trailing edges of the wings (**INSET RIGHT**), which rotated to present two flat surfaces to the airflow, were "effective and similar to those fitted to the de Havilland Vampire".

Dempster found the Supersette agile and responsive — "aerobatics are delightful and comparable to those experienced in a jet aircraft; it rolls and loops without effort and seems to be at home in any manoeuvre" — as well as extremely quiet and free of vibration. Dempster saw potential in the Supersette, stating:

"As an aeroplane for taking pupils through the elementary stage to the jet OTU [Operational Training Unit] I think it has possibilities; not because it behaves so much like a jet, but because the economics of flying training are such that sooner or later cheaper instruction will be demanded — and the Supersette might satisfy such a demand".



Despite the promise shown by the Supersette, the era of piston-engined trainers was drawing to a close, and after one final blaze of glory, in which Ferrari set a new air speed record of 260.65 m.p.h. (419km/h) in the Supersette on December 3, 1952, its chances of commercial success had all but dried up.

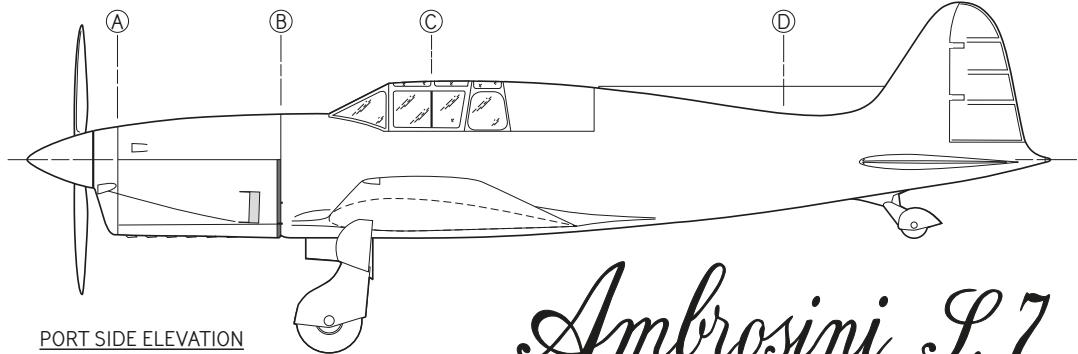
With their appearances in the UK during the early 1950s, however,

the S.7 and the Supersette added a much-needed shot of glamour and Italian style to the typically dreary English summer weather, and the last word should go to Derek Dempster, who, when drawing a conclusion from his brief but thoroughly enjoyable investigation of the Supersette, remarked:

"The criterion by which I judge an aeroplane is whether, regardless of the cost, I would like to own it. I would very much like to own an Ambrosini Supersette . . ."

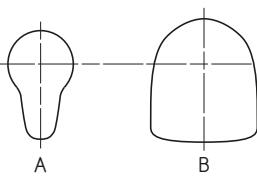


ACKNOWLEDGMENTS The Editor would like to thank Italian aviation historian Gregory Alegri for his invaluable assistance with the preparation of this feature

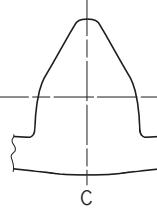


PORT SIDE ELEVATION

Ambrosini S.7

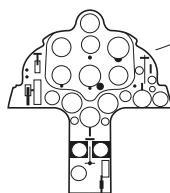


FUSELAGE SECTIONS

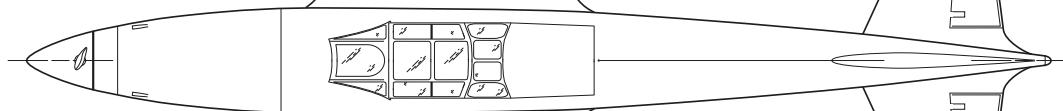


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Instrument panel scaled up x 2

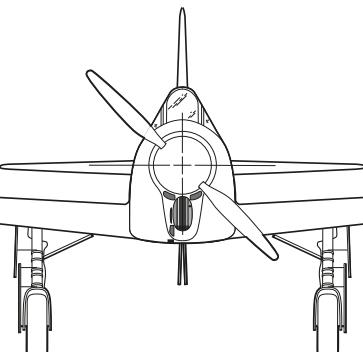


TYPICAL WING SECTION



PLAN VIEW

Scrap view of mainwheel leg without outboard undercarriage doors



FRONT ELEVATION

SAI Ambrosini S.7

Drawn & Traced by
ROMEO DA RELLE

Feet
Metres

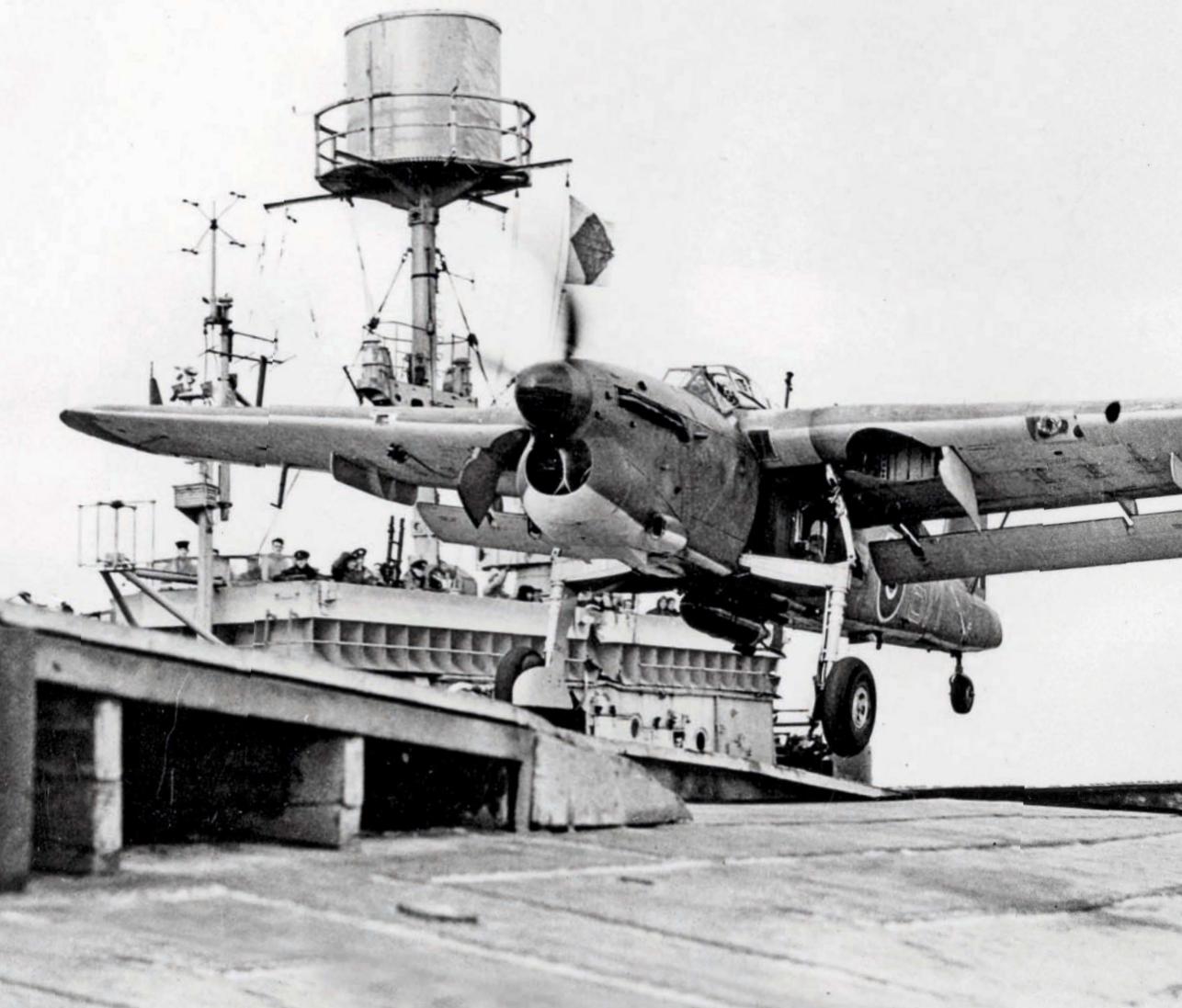




“A snowflake settling on the water...”

Learning to fly the Barracuda

In May 2011 British naval aviation specialist **MATTHEW WILLIS** interviewed former Fleet Air Arm pilot **Lt Derrik Armon RNVR** to find out what it was really like to fly the unusual Fairey Barracuda torpedo-bomber, which, like its piscatorial namesake, was widely reputed to be disagreeable — if not downright dangerous



RIGHT Lieutenant Derrik Arsmson RNVR (centre) with his Barracuda crew, Observer Butler (left) and Telegraphist/Air Gunner A.K. Johnson during training on the type during 1944. The first fully Barracuda-equipped unit was No 827 Sqn at Stretton, which received its first 12 Mk IIs in January 1943.

ARMSON FAMILY VIA AUTHOR

MAIN PICTURE A Barracuda Mk II of No 827 Sqn, carrying a 1,600lb (725kg) armour-piercing bomb, claws its way into the air from the deck of HMS Furious during one of the raids on the German battleship Tirpitz during the summer of 1944. Note the makeshift wooden "ski jump" fitted to the carrier's bow to help get the aircraft airborne.

TAH ARCHIVE



IN 1943 THE expansion of the Fleet Air Arm was in full swing. Having begun the war with a handful of squadrons and obsolete aircraft, it now had large numbers of new aircraft finally coming into service, along with a steady increase in the number of aircraft carriers. One of the most important of these new aircraft was the Fairey Barracuda, a three-seat torpedo- and divebomber, intended both to replace the existing Fairey Swordfish and Albacore biplanes in the Torpedo Bomber Reconnaissance (TBR) squadrons and form new units from scratch.

The Fleet Air Arm needed pilots to fly these new aircraft, which meant a large number of personnel had to be trained. Owing to the pressures of training so many new pilots, along with the danger inherent in doing so within range of the enemy, many naval aviators at this stage in the war undertook at least part of their flying training in the USA or Canada. One of these was Lt Derrik Arsmson RNVR, then an Ordinary Seaman. In an interview with the author in May 2011, he described how he came to be a trainee TBR pilot:

"I was a seaman to begin with. I was anxious to get in and win the war for England, you know! So I made up my mind and became a 'Jolly Jack Tar'. Along with another chap who I'd got friendly with, I discovered that I get terribly seasick. I was drafted to a destroyer, and after about a week of that, I'd had enough."

"The chap I was friendly with said 'They're advertising on the noticeboard for people to join the Fleet Air Arm as





VIA AUTHOR

ABOVE A typically magnificent image of the first production Barracuda Mk II, P9667, by renowned aviation photographer CHARLES E. BROWN, who manages to make the unlovely torpedo-bomber look at least partly attractive. Note the Mk XII torpedo fitted, but without its usual "air tail", which was still officially top secret.

pilots. If I put in for that, at least it would get me ashore'. So I said 'I'll come with you'. And that's exactly what happened. We both went to St Vincent in Portsmouth — this was towards the end of 1943 — and before we knew what had happened we'd gone through some basic training and they were shipping us off to Canada to learn to fly.

"We went to Saint-Eugène near Montreal and began to learn to fly aeroplanes — [Fairchild] Cornell monoplanes. We got through that, graduated from that course and went on to Kingston, Ontario, to fly [North American] Harvards. That was from Elementary Flying Training to Further Training. I was one of the lucky ones, got my wings, got promoted, came back to the UK and got a commission."

As Derrik was under 21 years of age, the

commissioned rank he was given was that of Midshipman, with a promotion to Sub-Lieutenant when he reached 21.

Face to face with the Barracuda

One of the difficulties identified with the Barracuda's introduction into service was the scale of the step in technology it represented from the previous generation of aircraft. Many of the early problems with the Barracuda had been associated with crews accustomed to somewhat more forgiving biplanes being caught out by the very different handling characteristics of faster, more heavily loaded monoplanes. For this reason, aircrew members intended to fly them did not do any advanced training on older operational types, as had been customary previously. Instead, after completing their flying

An official Air Ministry photograph of Fairey-built Barracuda Mk II LS789 with torpedo. Seen here to good advantage is the Observer's bulged Plexiglas windows beneath the shoulder-mounted wing.

TAH ARCHIVE





ABOVE A Barracuda departs HMS Theseus during a training sortie during 1946, when the carrier was used for trials and training with Barracudas operating from RNAS Milltown (HMS Fulmar II), near Lossiemouth. By this time, most front-line Barracuda units were re-equipping, or had been re-equipped, with the far more popular Firefly.

training, pilots went straight to one of the naval air stations assigned to Barracuda training.

Derrick's first flight in the type was in Blackburn-built Barracuda Mk II BV916 in September 1944.

"After being commissioned," Armon said, "we came back from leave to a place up in Scotland [Royal Naval Air Station Fearn — *HMS Owl* — in the Highlands] and learned to fly the Barracuda. We were there for about a month learning how to fly them, day and night. Then we were moved to the East of Scotland, to Carnoustie [RNAS East Haven — *HMS Peewit*], where we did deck-landing training, and that lasted a month."

"We did 'Dummy Deck Landings' on an airfield which was marked out with white lines like the deck of an aircraft carrier, showing the arrester wires, barriers, everything. We did that, in and out, all day long, until we finished up and they put a carrier off the coast. We did about four or five deck landings to start off with, and then some more a little later on. During all that time we were flying quite intensively, so we knew anything and everything about the Barracuda."

"We did circuits and bumps on the end of the runway. The CO of the station was Cdr Everett, a very good pilot. When we arrived to learn how to fly the Barracuda from a carrier, we landed at East Haven and he welcomed us into the wardroom. 'Now gentlemen,' he said, 'this is a school; in fact it is a university. It is a place where we will teach you to land your Barracuda on an aircraft carrier like a snowflake settling on the water. And you will all pass, although one or two of you might find it difficult — in which case you can go back to the Army and dig

latrines, or go down a coalmine'. And he taught us how to fly these things."

"One of the fascinating things for me was that on the left-hand side of the Barracuda's cockpit there were two levers; one for the flaps, and one for the undercarriage. Depending on which one you moved, the flaps came up or down or the undercarriage retracted or extended. When you were doing circuits and bumps — and it was a very tight schedule, with five or six aircraft one after the other — the minute you got the 'cut' from the batsman, you cut the engine and dropped on to the runway, opened the throttle up wide, and took off again, [going] around four or five times like that with all these other guys, one after the other. And when, in the sweat and the panic, you thought 'I'm getting a bit close to that one,' you tended to rush and get things in the wrong order. The most common [mistake] was with these two levers. [They were] not very big and quite close together, and it was quite easy to select the lever for the undercarriage rather than the flaps. There would be an awful expensive-sounding grinding noise when you did that, and when Cdr Everett was there, well, I think if he'd had a gun he'd have shot us."

An unfair reputation?

By this time the Barracuda had already acquired a reputation as a difficult, even dangerous, aircraft. During the type's early introduction into service, a number of Barracudas had crashed owing to handling quirks under certain flight conditions, and problems with the wing-folding mechanism that were not picked up in the early testing phase became apparent.



LEFT The Barracuda's "office" was relatively simple, with the "basic six" instruments — airspeed indicator, artificial horizon, rate-of-climb indicator, altimeter, compass and turn-and-bank indicator — being positioned immediately in front of the control column and its spade-grip.

BELOW This head-on view of the prototype Barracuda Mk I, P1767, at Boscombe Down in October 1941, shows the insect-like appearance of the new torpedo-bomber. Note the distinctive Youngman flaps fitted beneath the wings.

"A lot of people didn't like them; a lot were fed up with them and a lot just packed it in", Armstrong recalled. "But frankly, once you listened to what people were telling you about flying them, they weren't that bad. You weren't flying a fighter, you were flying a torpedo-bomber, dropping depth-charges and things like that. I think once you'd recognised that it was underpowered, you just didn't let it start sinking. They were safe, in the sense that you couldn't really hurt yourself in a Barracuda unless you went over the side of a carrier when deck-landing."

One of the most often-praised features of the Barracuda was the view from its cockpit for deck-landing. Fairey had successfully packaged the Rolls-Royce Merlin engine and positioned the cockpit in such a way that the pilot had an excellent view ahead, unlike many naval types.

"I had no problem at all with deck landing," remembered Derrik. "You're sitting up there, up at the front, and you can see right over the 'bow'. The undercarriage was horrendous [though]; it

folded up in all sorts of weird ways. If you came down a bit heavy when you landed on, it could break. And if it broke, the chances were that it would slew across to one side or the other and go over the side. Usually that was 'curtains', although I did know one or two people who survived it.

"The divebrakes were extraordinary things. They were part of the flap system, but they deflected upwards [when used as divebrakes], which really influenced the flight of the aircraft; nothing that you weren't expecting [though], as far as I was concerned anyway. They slowed you down, but you weren't going fast anyway. Our stalling speed was something over 50 m.p.h. [80km/h] — very like driving a car."

Once the pilots had learned to fly the Barracuda, the next step was to learn how to use it in combat. This would involve dive-bombing and dropping depth charges, but until relatively late in the war the Barracuda's main weapon was the torpedo, which took up the majority



Crunch! A Barracuda Mk II comes to grief while landing on an aircraft carrier, an occurrence that was not uncommon according to Lt Derrik Armson, who nevertheless enjoyed his comparatively brief stint on the type. BELOW Armson (second from right, standing) with his Flight companions during their Barracuda training.



TAH ARCHIVE / ARMSON FAMILY ARCHIVE VIA AUTHOR

of operational training. Derrik described the process, which he undertook from Ronaldsway on the Isle of Man in the last months of 1944:

"We did quite a lot of practising dropping torpedoes, which was fascinating because you had to be very careful. We had a maximum speed which you had to drop them at, otherwise they would break up. To start with they loaded the Barracuda up with a torpedo made of concrete. We thought that they would give us operational torpedoes and that would be it. We had to learn to fly with this heavy concrete 'block' on, including flying low."

Tin hats on...

After the crews had become accustomed to the handling of the aircraft with the weight of the torpedo, and had learned to fly in formation at low level, the next step was to try practice drops still using the concrete 'torpedo':

"They put a destroyer at our disposal and said 'attack that'. We went through the usual procedure for torpedo attacks, flying in fairly low fairly fast and dropping the torpedo at the correct angle for it to hit the target. But they were just chunks of concrete, so when they hit the water they just broke up or sank, and the ship we were targeting sent a radio signal up." This was to indicate whether the ordnance had been launched on target and at the right distance. It did not always go according to plan:

"There were three of us in the Flight in the first wave approaching the ship; we dropped our torpedoes, which hit the water and smashed up into big bits. The skipper of the ship told us to b****r off because we were sending chunks of concrete across the bridge, which didn't go down too well! But all the mistakes we were making were natural, common-sense ones.



"When they were satisfied that we had gained sufficient confidence, we were given real torpedoes, but instead of having an explosive charge on the head, they had a smoke canister. So we dropped these things, using the equipment in the pilot's cockpit for setting the course to steer."

The Barracuda used the Type F Torpedo Director which incorporated an analogue computer to compensate for the target ship's deflection, speed and even evasive manoeuvres. When the details were fed in the pilot had only to keep the ship in the sight while on his torpedo run. This was a considerable advance on



VIA AUTHOR

ABOVE Another of CHARLES E. BROWN's splendid portraits of Barracuda Mk II P9667, clearly showing the Youngman flaps. Designed to an almost-impossible official specification for a multi-role naval aircraft, the Barracuda nevertheless managed to accrue a fine war record, from the fjords of Norway to the jungles of Sumatra.

the torpedo sight of the Swordfish, which was simply a row of lightbulbs to help the pilot judge the lay-off.

"Once we'd dropped the torpedo, they were set to [run at] a depth below the ship that we were aiming at. We didn't want to hit the ship, obviously, and they didn't want to lose the torpedo, which was a very expensive bit of equipment. If you dropped them to splash, the back of the torpedo could break and they'd just sink. If you dropped them with the nose of the aircraft angled downwards, they went straight into the water at an angle and plummeted down. If you dropped them slightly nose-up they didn't break but went along the surface like a steamboat, and you just had to hope they didn't hit the ship."

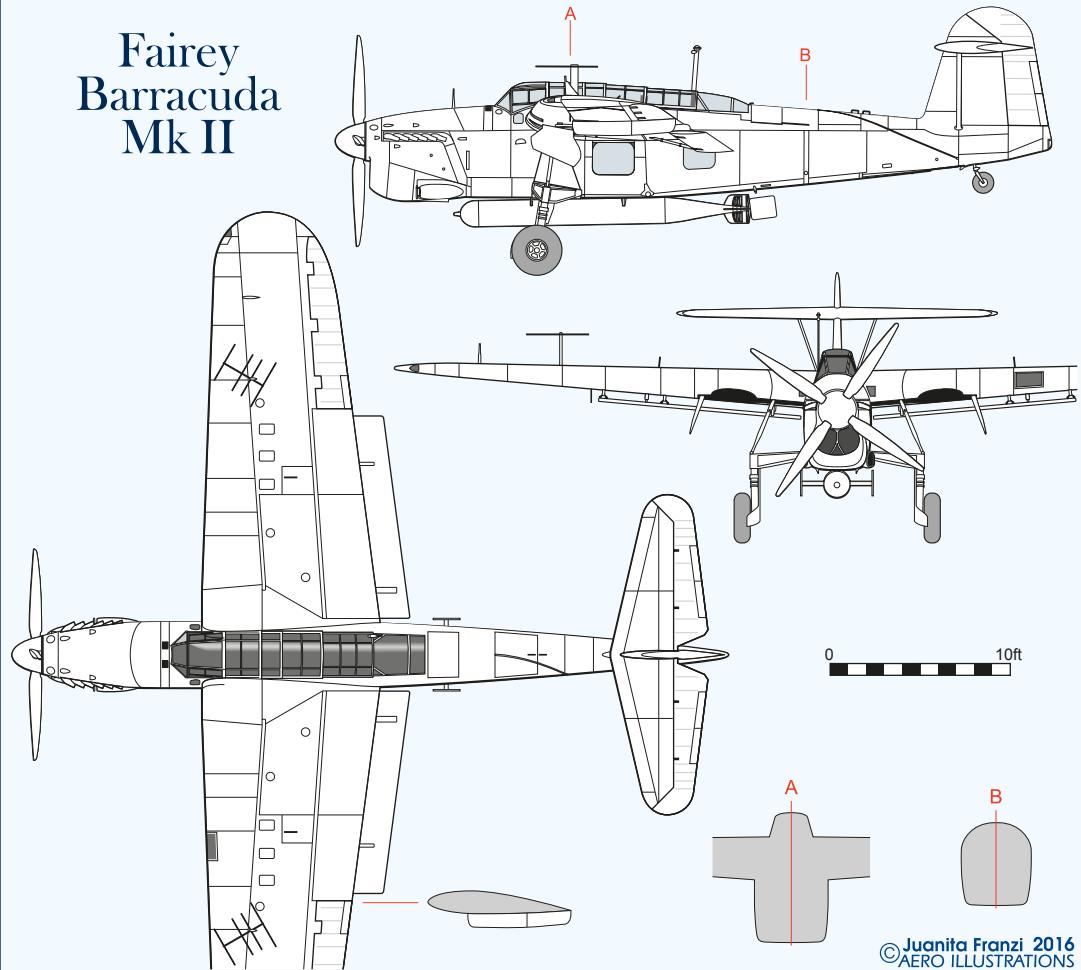
"So they were a bit tricky – it was all in the laps of the gods really. There was a fishing boat out there so that when the torpedo had run its course and run out of fuel, it bobbed up like a fishing float and smoke emitted from the nose. The fishing boat would then recover them, the whole lot of them, for the next round."

Although Derrik completed his Barracuda training, it was never to be put to operational use, as he recalled:

"We never had the opportunity to use any torpedoes in anger. That was the top and bottom of my experience with the Barracuda. At the end of the war in Europe we were posted to Northern Ireland before being sent to the Far East. All our aircraft, and most of the other squadrons which had Barracudas, were embarked in escort carriers to be sent out to the Far East. Then the [atomic] bomb was dropped so that all finished. We were all left sitting in Northern Ireland without any aeroplanes; they'd all gone to Belfast by then to be loaded up, so we were sent home and discharged."

"When the war with Japan suddenly finished, we were sent home on leave but they recalled us, replacing the Barracudas with [Fairey] Fireflies, which were super. The Barracudas, I think without exception, were taken out into the North Sea and pushed over the side of the carriers, so to the best of my knowledge, there isn't a single Barracuda anywhere."

Fairey Barracuda Mk II



© Juanita Franzi 2016
AERO ILLUSTRATIONS

"I found not a lot wrong with it, to be honest. It was easy to fly and easy to manoeuvre. The type had a reputation for being underpowered but I found it all right. Never had too much trouble or bother with it."

While it is indeed true that there are no surviving complete Barracudas, the Fleet Air Arm Museum at Yeovilton currently retains the remains of DP872, the 16th Barracuda Mk II from the first production batch from Boulton Paul, which crashed in August 1944 and was recovered in 1971. The Museum also has a large amount of LS931, a Fairey-built Mk II, which crashed on Jura in the Inner Hebrides in 1945 and was recovered in 2000, as well as remnants of Mk IIs DR306, PM870, MD953 and other airframes. It is hoped that these will be incorporated into a reconstructed airframe, on which some work has been completed by the Bluebird Project.



ACKNOWLEDGMENTS The author would like to thank Derrik Arsmson's family and Pieter Johnson for their invaluable assistance with the preparation of this feature

Fairey Barracuda Mk II data

Powerplant 1 x 1,640 h.p. single-stage two-speed-supercharged liquid-cooled Rolls-Royce Merlin 32 engine driving an 11ft 9in (3.5m)-diameter four-bladed Rotol propeller

Dimensions

Span	49ft 2in	(14.98m)
Length	39ft 9in	(12.12m)
Height	12ft 3in	(3.73m)
Wing area	414ft ²	(38.46m ²)

Weights

Empty	10,818lb	(4,907kg)
Loaded		
clean	12,600lb	(5,715kg)

with torpedo	14,112lb	(6,401kg)
maximum	14,250lb	(6,467kg)

Performance

Maximum speed	228 m.p.h. at 1,750ft	(367km/h at 530m)
Cruising speed	193 m.p.h. at 5,000ft	(310km/h at 1,520m)
Operational radius	290 miles	(467km)
Service ceiling	18,200ft	(5,550m)



ARMCHAIR AVIATION

We take a look at what's available for the aviation history enthusiast in the world of books and other literature, from hot-off-the-press publications to reissued classics

Hawker P.1103 & P.1121: Camm's Last Fighter Projects

By Paul Martell-Mead and Barrie Hygate; Blue Envoy Press (order via e-mail to blue.envoy.services@googlemail.com); 8½in x 11in (215mm x 280mm); softback; 64 pages, illustrated; £11.95 + p&p; ISBN 978-0-95619-515-9

HAWKER AIRCRAFT originated as a rebranded Sopwith Aviation, developing an unbroken series of successful fighter designs that could trace its ancestry back to before the First World War. This book describes Hawker's efforts in the 1950s to produce projects that responded to RAF operational requirements OR.329, for an all-weather interceptor, and OR.339 for a long-range strike aircraft.

These contests were "won" by a Fairey project, killed off by Duncan Sandys' infamous 1957 Defence White Paper, and the BAC TSR.2, cancelled owing to cost overruns in 1965. This reviewer (who worked in the Hawker project office for several months in 1956 and — after national service — from 1958 until 1978) regrets that this book does not throw a little more light on the little-known Fairey project.

Nevertheless, the book is well researched regarding the P.1121 and its avionics and armament. I was blown away by the amount of material unearthed, and the three-view drawings by Barrie Hygate are excellent. This day-to-day history was made possible by the authors gaining access to the so-called "Camm diaries", previously alleged to have been lost in a fire.

As Hawker's chief designer, Sir Sydney bore the responsibility for overseeing projects and approving them for submission to the Ministry (or to the Hawker board for private-venturing, as with the P.1127). Preliminary design was then in the hands of three project engineers — Ralph Hooper, John Fozard and Ron Williams. All were young, relatively inexperienced and impatiently ambitious. Each was (in my view) to demonstrate a special talent: Hooper for design

development; Fozard for teaching aircraft design and Williams for preliminary design.

Hooper is now rightly honoured for his outstanding career as "the father of the P.1127/Harrier" and subsequently for directing the development of the Hawk. Since Hooper is the only survivor of the trio, this book rests heavily on his version of events, possibly to the detriment of Fozard and Williams. His views may (understandably) be coloured by Camm's well-known grudging approval of the P.1127.

This book arguably gives a wrong impression of Camm, indisputably the greatest fighter designer that Britain ever produced. Sir Sydney had a natural talent for design and a decades-long track record of successes, a combination that his "young gentlemen of the project office" could only dream of.

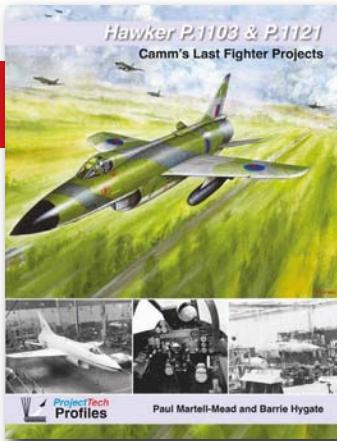
It may be, as the book suggests, that the wartime Camm was difficult to work for. He may well have liked to "ham it up" in the drawing office as the outspoken designer-genius. If this was his way of inspiring great work, it succeeded. Nonetheless, quoting his sayings out of context is rather misleading. He was not the geriatric obstacle-to-progress portrayed here.

If anyone concludes that Camm had "lost it" in the 1950s, consider his 1960s reaction on seeing the first drawing of a tandem-seat version of the P.1127: "That thing will go ahead over my dead body!". Sir Sydney was right, in both his forecast and his clear-headed assessment of a misconceived design.

ROY BRAYBROOK

Regia Aeronautica vs Royal Air Force: The Battle of Britain — Those Bitter British Skies 1940–1941

By Nicola Malizia; Aviation Collectables Company Srls, Via Garibaldi 63, 10026 Santena, Italy (available from The

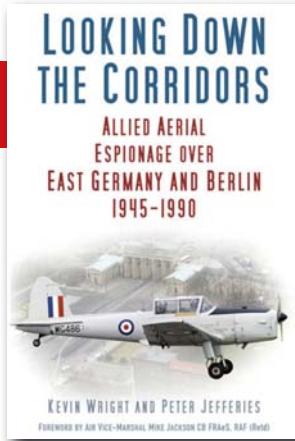


Aviation Bookshop, www.aviation-bookshop.com); 6½in x 9in (165mm x 233mm); softback; 164 pages, illustrated; £16.99. ISBN 978-8-889410-50-5

ITALY'S REGIA AERONAUTICA units, designated *Corpo Aereo Italiano* (CAI), arrived in Belgium in October 1940 to participate in the Battle of Britain. Their main objectives were the English south-east coastal ports. The CAI campaign was not successful and the Italians gained very little from their short-lived operations over England. However, there is no doubting the courage and skill of the Italian airmen involved. They were hampered by technical problems, poor weather and a lack of experience in night flying. Also, unbeknown to them, communications between the Axis powers were being intercepted and decoded by the British using *Ultra* signals intelligence.

Perhaps *Ultra* would help the English reader to decode and better understand this book. The 142 photographs and ten colour profiles are well produced but this Italian/English bilingual publication is seriously let down by an English translation that is poetically hyperbolic and often incoherent. Amusement in trying to make sense of it rapidly gives way to bemused tedium.

Unless one can understand the original Italian text, it is difficult to ascertain if an objective appraisal of the subject matter has been compromised by poor translation, thereby suggesting a subjective and sentimental bias towards the CAI. For example, on page 81 the caption for the photograph of Flt Lt Brian Blachford displaying trophies obtained from a combat victory labels him as "insensitive". Another caption describes the removal of items from a crashed Italian bomber as "looting". In contrast, Italian airmen are variously described as being "elegant" or "illustrious". Nor are matters helped by careless editing throughout the book — Harwich, Ipswich and Felixstowe become "Harwick", "Ipsiwick" and "Felixstown". Ramsgate becomes "RaM.Sgtate".



On page 115 the British monarch is referred to as "Her Majesty George V". We will never know which of the two errors the actual monarch, His Majesty King George VI, might have taken most exception to. Unfortunately such mistakes are not the exception within this publication which presents a veritable Balbo of them, thereby making it difficult to recommend.

GARY BARTLETT

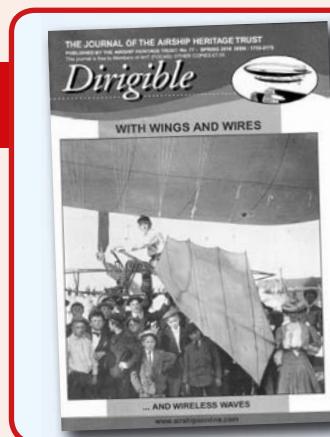
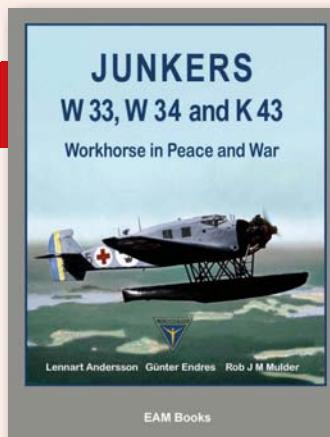
Looking Down The Corridors: Allied Aerial Espionage over East Germany and Berlin 1945–1990

By Kevin Wright and Peter Jefferies; The History Press, The Mill, Brimscombe Port, Stroud, Gloucestershire, GL5 2QG; 6in x 9½in (155mm x 236mm); hardback; 224 pages, illustrated; £30. ISBN 978-0-750955-77-5

BEHIND THE SOMEWHAT prosaic title, authors Dr Kevin Wright and Peter Jefferies have assembled an outstanding addition to the recorded history of Cold War military aviation. It has long been known that the Allied powers — the UK, USA and France — all flew clandestine reconnaissance missions over Germany during the years in which it was the divided front line of the superpower standoff in Europe.

Typically employing modified transport aircraft and trainers, ranging from the diminutive de Havilland Canada Chipmunk to the mighty Boeing C-97 Stratofreighter, these intelligence-gathers exploited the Berlin Air Corridors and Control Zone which provided a legitimate cover for flights over East Germany and Berlin — at the time one of the world's most heavily militarised zones, and home to some of the Soviet armed forces' best-equipped and highest-readiness units.

Rights of access ensured that three Air Corridors were open to regulated civilian and



military traffic, and provided a lifeline to the Western Allies' West Berlin airports — Tempelhof, Tegel and Gatow. So long as the aircraft flying these routes remained within their authorised airspace and appeared outwardly to be conducting "innocent" transport and training flights, they could be equipped with concealed cameras and other intelligence-gathering equipment.

While the Soviets and their East German allies were well aware of the "game", there was little they could do other than occasionally harass the Western aircraft — this unwelcome attention was not restricted to the "ferrets" of course. Meanwhile, the clandestine reconnaissance aircraft provided the Western intelligence community with a wealth of information on the Warsaw Pact order of battle until the fall of the Berlin Wall.

The authors have excelled themselves in bringing together recently declassified materials from The National Archives and other sources, with fascinating extensive interviews with the people involved. In addition to meticulous research into the aircraft and units involved in the overflights, Wright and Jefferies — a former university lecturer in International Security Studies and an ex-Intelligence Corps Photographic Interpreter respectively — also shed light on how gathered imagery was analysed and exploited, assess its value and uncover the degree to which the "other side" was aware of these activities. (In the case of the latter, the apparent staging of "show-and-tells" of new Soviet ground forces equipment suggests that their respective intelligence agencies were well aware of the opportunity the overflights presented to reveal new hardware.)

The photographic coverage is limited, but never less than interesting. However, the photo plate of a Yak-28 caught by a British overflight while undergoing maintenance at Werneuchen is a recce *Brewer*, not a *Firebar* interceptor. This

is a minor quibble, however, that does nothing to detract from what will surely become the standard reference work on this compelling part of Cold War military history.

THOMAS NEWDICK

The Bridge to Airpower: Logistics Support for Royal Flying Corps Operations on the Western Front 1914–18

By Peter Dye; Naval Institute Press (available in the UK via Eurospan Group, 3 Henrietta Street, London WC2E 8LU); 6½in x 9½in (165mm x 241mm); hardback; 304 pages, illustrated; £30. ISBN 978-1-612518-39-8

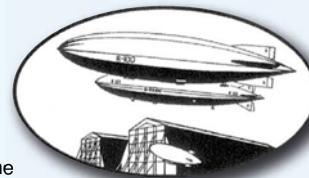
A GREAT MANY words have been written about the British aeroplanes and airmen of the First World War, but far less attention has been devoted to the supporting organisational structures that kept them operational. One man who has already done much to redress the balance is Peter Dye, who over the last two decades has produced several significant papers on Royal Flying Corps (RFC) and RAF logistics.

This scholarly volume embodies his extensive research into RFC logistics. The main text occupies only some 163 pages, the remaining 105 pages being taken up by the appendices, notes, bibliography and index. This might seem unbalanced, but it has avoided the need to interrupt the flow of the account with an excess of tables and footnotes.

In the book's four chapters the author assesses the effectiveness of the RFC's logistics by spotlighting three specific periods: the Somme (1916); Arras and Third Ypres (1917) and the Hundred Days (1918), when rapid adaptation to mobile operations became necessary. The first three chapters concentrate on the evolution of the force's Western Front operations, the development of logistic operations through the

THE AIRSHIP HERITAGE TRUST

Dirigible magazine edited by Giles Camplin, e-mail editor@airshipsonline.com; 11½in x 8¼in (297mm x 210mm); illustrated; £25 for annual UK AHT membership, which includes three issues of Dirigible inc p&p (overseas AHT membership £35). Website www.airshipsonline.com



ESTABLISHED IN 1985 as the Friends of the Cardington Airship Station (FOCAS), the Airship Heritage Trust (AHT), as the not-for-profit charitable organisation became in 1994, is dedicated to fostering and promoting the study of the history of airships and lighter-than-air (LTA) craft, with the aim of stimulating interest in the role of the historic site at Cardington in Bedfordshire as an airship base, and promoting the development of a national museum and study centre devoted to the airship.

The AHT's in-house journal, *Dirigible*, was established in 1989 and covers a wide range of airship-related topics, from the early days of LTA flight through the evolution of the airship to more recent developments. The 77th issue is now available and an index of every edition and back issues are available from the AHT website. As *Dirigible*'s Editor, Giles Camplin, explains: "We believe passionately in sharing the story of British airships and the fascinating stories of the people behind them, the technology and their place in history — which is often overlooked". For anyone with even a passing interest in this significant but oft-neglected chapter in aeronautical history, this is essential reading. **NS**

course of the war and the supply of aircraft and engines, with accounts of typical problems encountered, the Hispano-Suiza engine being one chosen example. The fourth chapter looks at the lessons thus learnt and how the practices came to be applied to RAF planning for the Second World War.

Explicit tables support the text, and there is a 12-page section of monochrome illustrations, some rather murky, on the same paper as used for the rest of the book. However, the illustrations are not the *raison d'être* of this volume. The two appendices provide a good variety of logistic data and a list of logistic units from 1914 to 1918.

This is altogether a very useful and informative volume, from which can be gleaned much information relevant to virtually all aspects of RFC operations during the First World War.

PHILIP JARRETT

Junkers W 33, W 34 and K 43: Workhorse in Peace and War

By Lennart Andersson, Günter Endres and Rob J.M. Mulder; EAM Books EEIG, 3 Gatesmead, Lindfield, West Sussex RH16 1SN (order via e-mail to order@eambooks.com); 8½in x 11in (216mm x 279mm); hardback; 272 pages, illustrated; £20 inc p&p (UK), £25 inc p&p (Europe), £35 inc p&p (RoW). ISBN 978-0-957374-1-6

BY THE MID-1920s, having already achieved remarkable success with his pioneering all-metal F 13 single-engined monoplane, Hugo Junkers foresaw the demand for an improved version of greater power, capacity and range, which, he hoped, would provide the next major earner for his Dessau-based company. Designed to an official German specification for a modern seaplane, the result was the inline-engined W 33 and its sibling, the radial-powered W 34.

Between 1927 and 1929 the two variants went on to set a number of records for altitude — including a world record of nearly 42,000ft (12,800m) in May 1929 — and range, speed and endurance. Proving its worth to the Luftwaffe as a rugged, dependable floatplane and land-based transport in the inter-war and wartime periods, the W 33/W 34 also saw service, civil and military (as the K 43), for numerous other nations, ultimately plying its trade in 34 countries spread across every continent.

Each of the three co-authors of this well-researched and lovingly crafted hardback are highly respected specialists in their fields, and, as usual with EAM, no stone has been left unturned to produce the definitive tome on the subject. Comprising 21 chapters, from *Design and Production: Aiming for More to Last Frontier: A Golden Thread*, by way of Germany, the Soviet Union, Finland (as covered on pages 22–27 of this issue), Iran, China, Canada and several South American nations, this exhaustive survey of the three variants' long, peripatetic careers is accompanied by more than 230 photographs, reproduced well on the high-quality paper stock.

Of equal value are the copious appendices, which include a full production list, German W 33/W 34 civil D-registrations, the Luftwaffe examples' four-letter *Stammkennzeichen*, a list of operators, performance data, details of the types' record flights, their philatelic significance and information on the relics, survivors and sole full-size replica. Also gathered together are new and original three-view scale drawings of all three variants, plus 25 colour profile artworks by Gary K. Lai and Jiří Černošek showing the wide range of colours the aircraft wore in service.

While this is undoubtedly a niche subject, it is small independent publishers like EAM and Air-Britain, who are prepared to put their money where their mouth is and cover unusual subjects, who deserve to be rewarded with our support.

NICK STROUD

BOOKS IN BRIEF

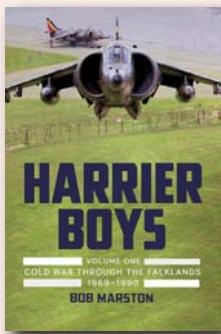
A quick round-up of what else is currently available for the aviation history enthusiast

HARRIER BOYS: Volume One — Cold War Through The Falklands 1969–1990

Bob Marston

Grub Street; ISBN 978-1-909808-29-4; £20

GRUB STREET'S extremely successful series of personal recollections of particular types continues to go from strength to strength, this volume concentrating on pilots' exploits in one of the most distinctive aircraft of the Cold War period. Curated by former Harrier pilot Bob Marston, this is vastly entertaining stuff, although the less-than-sparkling reproduction of the photographs in the run of text is distracting. Volume Two of *Harrier Boys* is imminent; if it's as enjoyable as the first, we look forward to it. **NS**



CLASSIC LIGHT AIRCRAFT: An Illustrated Look, 1920s to the Present

Ron Smith

Schiffer Publishing Ltd; ISBN 978-0-764348-96-9; £28.99 via amazon.co.uk

GIVEN THAT A "classic" is largely in the eye of the beholder — the Aeromot Ximango anyone? — this is a brave attempt to get as much info on as many light aircraft from around the world together in one place as possible. There's no shortage of variety, with more than 800 types covered, although brevity is an issue in some cases; the Saab Safir, built in numbers and with an interesting history, merits a mere 28 words — two less than the obscure Spezio Tuholer homebuilt. The focus of this handsome volume, however, is the photographs, which are beautifully reproduced on high-quality paper. **NS**

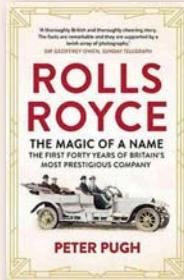


ROLLS-ROYCE — THE MAGIC OF A NAME: The First Forty Years of Britain's Most Prestigious Company, 1904–1944

Peter Pugh

Icon Books Ltd; ISBN 978-1-848319-24-0; RRP £10.99

ALTHOUGH THIS paperback reissue of the first volume of Peter Pugh's three-part history of Rolls-Royce is not an aviation book *per se*, its subject is so inextricably bound to the evolution of the British aircraft industry that it is impossible not to regard it as one. This is very much a history of the business, not the machinery, but as such is a vital addition to the aviation enthusiast's bookshelf. **NS**



PAINT LOCKER MAGIC

— A History of Naval Aviation Special Markings and Artwork

William Tate and Jim Meehan

Fonthill Media; ISBN 978-1-625450-41-8; RRP £30

THIS WELL-PRODUCED book deals specifically with American naval aviation special markings and nose-art, including those adorning US Navy, Marine Corps and Coast Guard aircraft from the Second World War to the War on Terror. The text is oddly arranged, there seeming to be no rhyme or reason to the order for each chapter's sub-headings; it is neither alphabetical nor numerical; chronological perhaps? It is never explained. The copious appendices detailing individual artworks are invaluable, however. **NS**

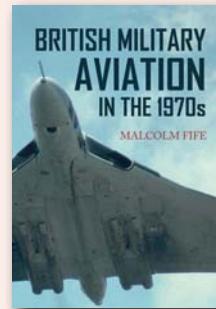


BRITISH MILITARY AVIATION IN THE 1970s

Malcolm Fife

Amberley Publishing Ltd; ISBN 978-1-445652-81-8; RRP £14.99

HERE AT TAH we're not huge fans of these increasingly prevalent my-photo-collection-with-extended-captions potboilers, smacking as they do of "pile-'em-high-and-sell-'em-(not that)-cheap", and while the repro here is good (despite many of the colour photographs being used far too small on cramped page layouts), this one does little to change our minds. Having said that, this example is laid out logically, the author knows his subject well and the appendix detailing British air stations and aircraft in the autumn of 1973 is a welcome bonus. If you like this sort of thing etc... **NS**



F-51 MUSTANG UNITS OF THE KOREAN WAR

Warren Thompson

Osprey Publishing; ISBN 978-1-472808-66-0; £13.99

THE 113th in Osprey's dependable *Combat Aircraft* series, this offering from regular TAH contributor and Korean War specialist Warren Thompson covers the revived fortunes — and otherwise — of the stalwart Mustang, recalled for front-line service in that conflict. The author uses first-hand accounts to tell the story with the help of his superb collection of contemporary photos, and Chris Davey's artworks are well up to his usual exceptional standard. **NS**



Lost & Found

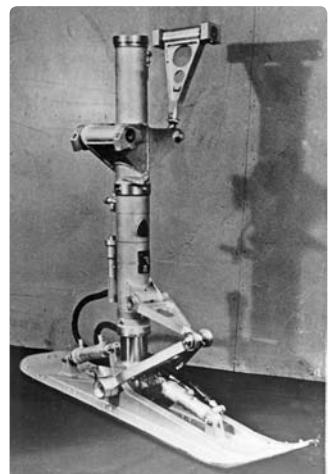
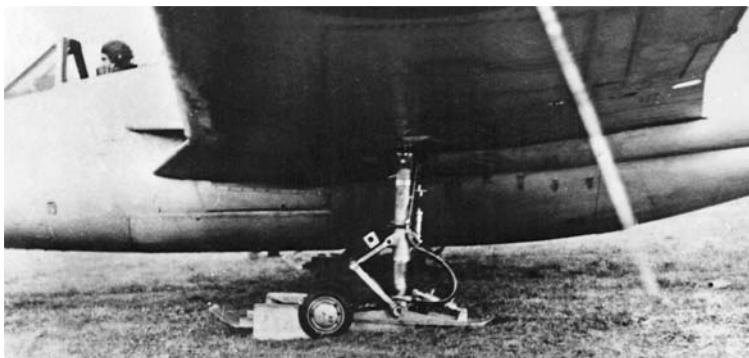
PHILIP JARRETT explores the lesser-known corners of aviation history, discovering unknown images and rediscovering long-lost details of aircraft, people and events. Here he needs your help to find out more about a French Vampire's unusual undercarriage

In the late 1940s France took delivery of 30 de Havilland Vampire jet fighters on loan, and another 90 F1s were delivered in flying condition. Then, in the early 1950s, French manufacturer Société Nationale de Constructions Aéronautiques du Sud-Est (SNCASE) assembled 67 Vampire FB.51s with de Havilland Goblin engines from British components, and manufactured 120 more with Goblins manufactured by Hispano-Suiza. The first flight of an entirely French-built Vampire took place on December 21, 1950, and the 187 production machines were built during 1950–54.

Then SNCASE developed the SE.530 Mistral, powered by the Hispano-Suiza-built Rolls-Royce Nene. The first of four pre-production aircraft

made its maiden flight on April 1, 1951, and two versions were built from late 1951 to 1954, 94 as SE.532s with Nene 102Bs and 150 as SE.535s with Nene 104s and ejection seats, also retrospectively installed in the SE.532s. Vampires and Mistrels equipped 16 Armée de l'Air units, and Aéronavale Squadron 57S used Vampires during 1953–61.

The accompanying images are from a series depicting a French Vampire with what is obviously an experimental main undercarriage incorporating a short, broad ski. Unfortunately the aircraft's identity is not visible, and the purpose of these experiments, and the results, are not known. I would be delighted to hear from anyone who can provide further enlightenment. If you know more, please contact the Editor.



ABOVE RIGHT The unusual ski undercarriage fitted to a French de Havilland Vampire. When and where was it fitted — and why?

ABOVE A similar short-ski undercarriage leg from the same series of photographs.

LEFT A close-up view of the Vampire's port undercarriage leg, which incorporates a short, broad ski and a pair of castors. If any readers have any further information on this experiment, do let us know!



LEFT Luftwaffe officer Unteroffizier Peter Müller poses with his handmade Focke-Wulf Fw 200 Condor model during his internment as a prisoner of war at Camp 13, near Murchison in Victoria, Australia, after his wartime capture in North Africa. Little is known about Müller, other than he was originally from Bayenthal, a suburb of Cologne, and that he was registered as Prisoner No 41597 at Murchison, where he had arrived by the end of December 1942.



A MODEL PRISONER

On a recent visit to the Southern Highlands of New South Wales, Australian aviation author and artist **MARK NELSON** discovered an exquisite — and completely unique — working model of a Focke-Wulf Fw 200 Condor built entirely from scratch by a Luftwaffe officer in a prisoner-of-war camp in Victoria following his capture after forced-landing in North Africa

IN OCTOBER 2015 my partner and I were having a short break in the Southern Highlands of New South Wales, a 2hr drive south of Sydney, partaking in our usual hobby of haunting various antique shops, when I stumbled across an amazing relic of an interesting and seldom-told part of Australia's Second World War history.

Readers outside Australia may not be aware that significant numbers of German — along with Italian and Japanese — prisoners of war (PoWs) were sent to Australia after their capture during the Second World War. Internment camps were set up in most states, and it was in one of these where this intriguing model was made.

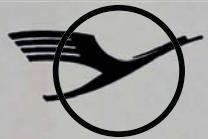
The state of Victoria had at least eight camps, each holding between 4,000 and 8,000 PoWs. Four of the camps — Dhurringile Mansion, Camp 13 near Murchison, Camp 6 near Graytown and Camp 5 near Myrtleford — were for enemy servicemen, and another four camps built near Tatura were for civilians considered a

security risk owing to their nationality. It was in Camp 13 that this model was made. The camp was constructed in 1941 and accommodated some 4,000 PoWs, most being Afrika Korps and Luftwaffe personnel, plus some Italians captured in North Africa and German merchant and naval shipping crews.

The beautiful hand-crafted Focke-Wulf Fw 200 model was made by *Unteroffizier* Peter Müller, a former Lufthansa pilot who had enlisted in the Luftwaffe only to be captured in North Africa when his aircraft, exact date and type unknown, made a forced-landing.

MIXING AND MATCHING

The Fw 200 Condor V1 prototype, *Werknummer* 2000, subsequently registered D-AERE and named *Saarland*, made its maiden flight on July 27, 1937, followed by successive pre-production *Versuchsflugzeug*, or V-series, prototypes. The first series production aircraft were designated Fw 200A-0, with some export versions using



ALL IMAGES VIA AUTHOR



different designations. These were followed by the Fw 200B series of aircraft, some of which were fitted with three-bladed propellers and two wheels on each main undercarriage unit, something not seen on all previous Condors (or indeed on this model).

The civil registration on the model, D-ALVA, is fictitious (it was never used for the inter-war German civil register), but the colours represent a pre-production "V" or A-0 series example, and it would appear that the model represents one of these earlier pre-war Lufthansa or export machines, despite a plaque on the model's base, fitted by one of the camp guards, stating that it was made by Lufthansa aircrew members as a Focke-Wulf Fw 200B.

It is possible that Müller flew Condors during his time with Lufthansa, and, incarcerated in B Compound in Camp 13, decided to make a model from scrap material, although precisely when it was made is unknown. The impressive model, which dominates the shop, Hunters &

TOP Still in exceptional condition, Müller's Condor model takes pride of place in Rod Cauchi and Kathy Kasz's Hunters & Collectors antique shop in Mittagong, New South Wales. **ABOVE LEFT** The attention to detail is remarkable, and includes handpainted Lufthansa insignia on the nose. **ABOVE MIDDLE** The inner engine nacelles incorporate fully retractable mainwheels. **ABOVE RIGHT** The door to the cabin opens and closes with a working latch.

Collectors Antiques in Mittagong, New South Wales, has survived the past seven decades extremely well. Much credit is due to the maker (or makers) when one considers the limited materials to which Müller had access, a far cry from these days of fine-scale modelling, when it is easy to acquire the finest kits and after-market accessories of an unbelievable level of detail. This unique model may look a little crude to our eyes, but it is arguably a piece of art, rather than simply a model.

The attention to detail on the model is remarkable, with many of the parts working



TOP The Condor is able to stand on its own undercarriage, but a stand of Australian Cypress was also built by Müller or possibly one of his fellow inmates. ABOVE LEFT The cockpit, with fully functioning control column and tailwheel lever. ABOVE RIGHT If the inner propellers are turned, the mainwheels extend from their engine nacelles.



ABOVE Müller's exceptional craftsmanship resulted in some exquisite touches, including the appearance of curtains in the cabin windows and formation lights — red on the port side and green to starboard — on the wingtips. The registration D-ALVA is spurious, never having been taken up on the German inter-war civil register.



ABOVE Even among all the other antiques in Hunters & Collectors, the Condor model is quite a conversation piece, with a span of some 43in (110cm), a length from nose to tail of 33½in (85cm) and, on its own undercarriage, a height of 10½in (27cm). Including the stand the model is 16½in (42cm) tall.

BELOW Although its total singularity and irreplaceability make it priceless, Müller's striking Condor model is for sale, and is listed in Hunters & Collectors' catalogue at AU\$22,000.

independently or together. For example, the passenger door in the port side of the rear fuselage opens and closes with a working latch. Turning the two inboard propellers anticlockwise from the front lowers each mainwheel.

In the cockpit, within a removable canopy section, there are working controls which lower the tailwheel and move the flying surfaces; removing the top of the fuselage provides access to the control lines that run from the cockpit to the latter. The model's removable wooden base was also made by the PoWs and is of Australian Cypress, with a plaque later applied by George Campbell, a camp guard.

SAVING THE CONDOR

How has this extraordinary model survived in such excellent condition? After the Condor's completion, the Commander of the camp stated that he wanted the model for himself. Müller and his companions refused to hand it over and were told that, if they did not, it would be destroyed. In order to save the model, George

Campbell arranged to have it smuggled out in an ambulance, the only vehicle allowed access to the camp.

The model thus ended up at Campbell's sister's house in Melbourne until the end of the war. There have been only two custodians of this unique model since, and it is currently for sale at Hunters & Collectors. Photographs of the model may be viewed on the shop's website at www.huntersandcollectorsantiques.com.

It is known that Peter Müller was repatriated to Germany in January 1947 and it would be fascinating to find out if he is still alive; and, if so, to pass on the news that the remarkable model he so lovingly created in a strange land, far from home, is still in existence and being admired and appreciated. If any readers have knowledge of the fate or whereabouts of Peter Müller or his family, please contact the Editor!



ACKNOWLEDGMENTS The author would like to thank Rod Cauchi and Kathy Kasz of Hunters & Collectors Antiques for their invaluable help with this feature





OFF THE BEATEN TRACK

Ever turned a corner to find something unexpected? The Aviation Historian's intrepid aeronautical explorer PETER DAVISON investigates the stories behind the oddities that turn up in the most unusual places

AMOTLEY SELECTION of modern jetliners still lies dormant at the old Athens airport at Ellinikon, which closed in 2001. Fortunately, however, on October 8, 2005, the venerable Douglas C-47B/DC-3 seen here, previously operated by the *Ypiresia Politikis Aeroporias* (YPA — the Greek Civil Aviation Authority), was loaded up and transported to a Russian café in the Athens suburb of Glyfada, where it was duly "sandwiched" between the AB supermarket and the Marin restaurant.

Something of a mystery surrounds this particular airframe, a probable transcription error during its civil registration in Greece having rather clouded its provenance. It seems likely that it is C-47B c/n 14797/26242, which was delivered to the USAAF as 43-48981 on October 10, 1944. Within a week it had been despatched to the RAF at Nassau in the Bahamas with the British serial KJ950, and by that November it was on strength with the RAF's Air Command South East Asia at Changi, Singapore. It is likely that Lord Mountbatten used this aircraft in his attempts to resolve the period's many regional problems. The Dak went on to serve with Nos 194 and 435 Sqns in India before being allocated to No 22 Maintenance Unit at Silloth in the UK in December 1947.

It was then passed in August 1949 to the Royal

ABOVE & BELOW What is thought to be Douglas C-47 c/n 14797/26242 at a café in Glyfada, Athens. Photography by MICK McNAMARA (above) and Peter Davison (below). To get a bird's-eye view of the C-47 on Google Earth, enter the co-ordinates N37.89039, E23.74714 in the "Search" panel.



Hellenic Air Force, with which it served at Elefsis until it was put on the Greek civil register as SX-ECD in December 1958 to operate with the YPA. It was at this point that the c/n confusion appears to have taken root. Whatever its history, since 2005 it has given the café's customers a new definition of "freshly squeezed"!





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SILVER CITY DC-2: KEN HONEY

Silver City in Africa Former Silver City First Officer Ken Honey shares his recollections and photographs of a memorable two-year posting to Libya with the airline in the late 1950s

Spies in Cold War Skies Doug Gordon takes a look at the West's strategic reconnaissance operations of the early 1950s, including the RAF's mysterious Operation Jiu-Jitsu

The Other Stockholm Run Nils Mathisrud uses first-hand accounts to explore the little-known Norwegian wartime transport service between the UK and Sweden



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